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Article I.

On the Nature, Mode of Propagation, Pathology, and Treatment of Scarlatina.

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Opinionum commenta delet dies, naturæ judicia confirmat.—Cicero.

The materials for this paper were furnished by fifty-eight cases of scarlatina observed and treated by the writer during a series of years, and of which records, more or less complete, were made at the time of observation. These records were kept without any other object than to preserve in available form an experience which otherwise would ere this have become a dim and imperfect recollection. The facts recorded were not seen through the medium of any theory, and I hope I have utilized my materials in the same impartial spirit in which they were gathered together.

The title was formulated by the Prize Essay Committee of the Kentucky State Medical Society, which also prescribed that the paper should embody original researches or clinical observations. This fact will explain the almost exclusively clinical method in which the subject is treated. Owing to the incessant demands of an active practice, and other professional duties, the paper was not completed within the time prescribed by the Committee. In the hope that it may contain something of value, the author now submits it to the profession in these pages.

The Nature of Scarlatina.—It seems that although one had never read anything relating to scarlatina, but had intelligently observed the disease for a few years, as it appears season after season in our cities, towns, and villages, and even in sparsely settled neighbourhoods in the country, he

would soon have convincing evidence that it spreads by personal communication from one to another. As observation continued and became more extended it would also appear that all persons are not equally susceptible to the morbific influence. A further examination could not fail to reveal that among those exempt from its inroad a large proportion had already had the disease, and that among those suffering from it only a very small number had ever had a prior attack.

These two peculiarities, namely, propagation from one person to another, and the almost perfect immunity conferred by a previous attack, would quickly lead the observer to class scarlatina with the group of infectious diseases to which it really belongs. Doubtless there may even now be some who deny the correctness of this view, but, even if recognized authorities were not unanimous on this point, the writer would still be compelled, on clinical grounds, to maintain that scarlatina is an acute infectious disease.

When large numbers of individuals, living under the most varied conditions, are attacked within a short time by the same disease, which often successively affects one member after another in the same family, we naturally look for a common cause. On analyzing my cases no reason can be found to ascribe the disease to either atmospheric or telluric conditions, for they occurred at all seasons and under the most different thermometric and barometric conditions.

In but few instances could the disease have been due to bad hygienic surroundings, for the majority of the cases occurred in families whose dwellings and mode of life were as nearly perfect as possible.

In only 21 out of 58 cases could the disease be traced to communication with scarlet fever patients, and only 24 cases occurred during the prevalence of scarlet fever epidemics. So that in 34 cases out of 58 which occurred when there was no wide-spread epidemic, the source of the disease could not be detected or was overlooked, or else the disease originated *de novo*, independent of infection from another person affected with it. The following case appears to belong to this doubtful class :—

CASE I.—W. G., æt. 5 years, was seized with vomiting, became drowsy and had fever. On the next day the characteristic rash appeared, and soon became general; there was moderate sore-throat, slight and transient albuminuria, but no casts. The rash had entirely disappeared by the end of the seventh day, and was followed by moderate desquamation, which was completed at the end of three weeks. This child had been confined to the premises of his parents for weeks prior to his illness. No case of scarlatina had occurred in the neighbourhood, and, so far as could be ascertained by careful inquiry, no one visiting the house had been near a scarlatinous patient for months. The disease was not prevailing to any marked extent in any part of the community at the time, and had not prevailed for a good while previously.

It is even more difficult to account for the sudden appearance of scarlatina in an isolated locality, where the disease has not been for a long time,

where no communication with an infected locality has taken place, and where no case of the disease has been known to exist for many miles around. There is of course a possibility that a light case, or cases, may have really occurred which were overlooked, and which served as a focus of infection. The plausibility of this supposition is shown by the following case:—

Case II.—In the summer of 1876 I saw in consultation with a professional friend, a little boy about 6 years of age, who had general dropsy and uræmia. Careful inquiry elicited the fact that about three weeks before he had a slight scarlet rash, which did not remain long and did not make him sick at the time. Yet nephritis and uræmia ensued, and the little patient died in convulsions very shortly after I saw him. In this case the nature of the rash had been overlooked by the mother, who had no idea that her child had scarlatina, and only consulted a physician when the dropsy and great pallor, having reached a formidable degree, suggested to her mind that the child might be in a dangerous condition.

The question of a *de novo* origin of scarlatina has become considerably narrowed down since it became known that the disease occurs also in several species of domestic animals, namely, the cat, dog, horse, and hog. It can hardly be doubted that many cases which were supposed to have originated independent of infection may have been due to transmission of the disease from some of these lower animals.

The infectious nature of scarlatina was strongly indicated in a good many instances among my fifty-eight cases. In the family of Mr. A. were five children, whose ages ranged from 23 months to 10 years. The four younger ones successively sickened, but the oldest, a remarkably strong and healthy boy, who had passed through an attack of scarlatina four years before, escaped. In Mr. M.'s family were also five children, of these the three younger were successively taken sick, so as to make it very apparent that those later attacked had contracted the disease from the first. The two elder children had several years before had a severe attack of scarlet-fever, nevertheless one of them now had the disease again with nephritis and uræmic convulsions. Mr. B. had a family of six children; one of these developed scarlatina, and in the course of two weeks four of the children were taken down with it. The youngest, a suckling infant of six months, alone escaped. Many other similar cases have occurred in my experience, but I restrict myself to those which belong to the number included in the clinical material of this paper.

A study of larger numbers of cases would undoubtedly make the infectious nature of scarlatina appear more conspicuous, but even the cases recorded by me sufficed to impress it very emphatically on my own mind.

The lesson taught by clinical observation has been confirmed by experimental inoculation, and the results amount to absolute demonstration. Miquel, Stole, Rostan, and Williams relate cases in which healthy persons were artificially infected by inoculating them with blood, or epidermic

scales taken from scarlet fever patients. The contents of vesicles on the skin of patients with scarlatina have also been used for the same purpose. These inoculations appear not only to have been followed by the characteristic febrile exanthem, in some instances as violent as the disease naturally contracted, but they also conferred, at least, a certain degree of protection, for repeated inoculation failed to produce the rash and fever, which had followed the first.

Turning now from further consideration of the infectious nature of scarlatina, to inquire into the nature of the infecting agent, the writer finds himself face to face with a problem that has excited the curiosity of medical men for ages, and baffled their closest investigations.

While some have frankly confessed entire ignorance as to everything concerning the contagium of scarlatina, declaring that we know nothing about it save its effects, others have thought that the bacteria found in the blood of scarlatina patients constitute the infectious substance and the true and only cause of the disease. In some of the few autopsies made by the writer he found bacteria in great numbers both in the blood and serous effusions in the pleuræ, pericardium, and peritoneum. But as in these cases the examination was not made very soon after death, the presence of the bacteria was attributed to decomposition, and when found in the blood of one patient during life they were supposed to be the result rather than the cause of the disease. All this time it was believed that the scarlatinous poison existed in the blood, and it was known also that inoculations with blood from scarlet fever patients had infected healthy persons with the disease. Neither was it unknown to the writer that the injection of blood from scarlet fever patients in which bacteria were present, was followed by the appearance of innumerable bacteria in the blood of the animal receiving the injection, while at the same time grave constitutional disturbances manifested themselves, and the greater number of animals thus treated died—but not with the characteristic symptoms of scarlatina. Hence one could not regard the presence of bacteria in the blood of scarlatinous patients as having solved the question. What is the nature of the poison of scarlatina? Microscopical investigations extending over a series of years have led to the discovery of a minute organism which appears to be peculiar to scarlet fever. The discovery was made by the distinguished Dr. Eklund,[1] of Stockholm, but, so far as the writer has been able to ascertain, it has not, up to this time, been laid before the medical profession of the United States. Under these circumstances, and having repeated, and to some extent confirmed, the investigations of Dr. E., I feel at liberty to give the following *résumé* of the conclusions to which these investigations have led.

In the urine of scarlatinous patients there is constantly present a truly

[1] Contribution a la Geographie Medicale.

prodigious mass of peculiar cellular bodies, which have received the name of plax scindens. They consist of sporoidal cells, flat, oval, or rounded, and either colourless or yellowish-white; they have a distinct cell wall, and a nucleus of a clear brownish colour. Sometimes the nucleus contains a very minute nucleolus. As seen floating about in the fluid examined, they often exhibit rotatory or screwing or see-saw movements. The investigations of Dr. Eklund thus far I have repeatedly verified. He further observed that these little bodies multiply first by division of the nucleolus, then the nucleus divides, lastly the cell itself undergoes division. He has never been able with certainty to determine that mycelium filaments develop from these cells. As a rule they were found free, and only exceptionally were they accompanied with extremely minute mycelial filaments. The cells of plax scindens never arrange themselves in rows like strings of beads, as do ferments, nor do they cling together in groups, as do the zoogloea properly so called.

The cells of "plax scindens" are certainly not identical with the small corpuscles described by Schultze, and mentioned in the first volume of Stricker's "Histology," page 379. The latter were found in the blood of healthy persons; the former, so far as yet ascertained, only in persons with scarlatina. It also seems that they differ materially in character and conformation.

The hæmatoblasts of Hayem, mentioned in Satterthwaite's "Histology," page 47, also differ materially from the cells of plax scindens.

The hæmatoblasts are said to make their appearance in the blood during convalescence from acute fever, and after considerable losses of blood, while the cells of plax are found in greatest abundance during the height of scarlet fever, not only in the blood, but also in the urine, and then rapidly disappear.

Since my attention was called to this interesting discovery, I have often examined the urine of patients having scarlatina, and have always found the plax scindens in great numbers. Examinations of blood from scarlatinous patients also revealed the presence of the same cells. So far as my own limited observations go, the plax scindens is not found in the blood or urine in any other disease than scarlatina, and is said to be constantly present in these fluids in this disease. Hence it would appear as if the infectious agent in scarlatina has at last been found. All honour to our distinguished transatlantic investigator. The writer of this essay congratulates himself upon having had this opportunity of calling the attention of his professional brethren of the United States to this interesting and important research of Dr. Eklund.

Mode of Propagation.—The mode of propagation of a disease depends upon its nature, the latter in its turn is determined by the nature of the cause to which it is due. The circumstances or conditions favourable to the active operation of the cause must also be taken into account in order

to understand the mode of propagation. Hence a study of the susceptibility to scarlatina, and the nature and origin of the plax scindens (believed to be its only cause), are both essential to the investigation of its mode of spreading.

Differences in the degree of susceptibility to this as well as to other infectious diseases are of daily observation. Age appears to be a powerful element in creating a predisposition to scarlatina, as will be seen by the following table giving the age of my cases :—

	Males.	Females.	Total.
Under 1 year	1	1	2
Between 1 and 2 years	1	2	3
" 2 " 3 "	2	0	2
" 3 " 4 "	3	2	5
" 4 " 5 "	4	5	9
" 5 " 6 "	3	2	5
" 6 " 7 "	7	2	9
" 7 " 8 "	1	3	4
" 8 " 9 "	3	0	3
" 9 " 10 "	0	2	2
" 10 " 11 "	1	2	3
" 11 " 12 "	0	2	2
" 12 " 13 "	1	2	3
" 13 " 14 "	0	0	0
" 14 " 15 "	1	0	1
" 15 " 16 "	0	2	2
" 22 " 23 "	0	1	1
" 26 " 27 "	0	1	1
" 32 " 33 "	0	1	1
	28	30	58

From this table it would appear that young infants are not very susceptible to the disease. Only two cases out of fifty-eight were under one year. The first was a girl of three weeks ; the rash was well marked and typical ; the throat but slightly affected ; the urine could not conveniently be examined ; there was decided desquamation, but the scales were rather branny than flaky, and not excessive in quantity. Convalescence was established within a week.

The second was a boy, almost a year old, large and fat. The rash was characteristic, but moderate. The glands became early affected, and soon there was general infiltration, with great swelling and induration of the whole neck, which presented an appearance resembling the peculiar form of carcinoma of the breast, which the French call " carcinoma a cuirasse." Respiration became much impeded, and the little patient died on the sixth day of the disease from a combination of coma and asthenia.

After the 15th year females appear to be far more susceptible than males, as there is no male among my cases after that age. The number of females over fifteen years was five. Two of these five cases, however, occurred in the same person. Both attacks were incurred by nursing children sick with scarlet fever. The patient had gone through the disease in

childhood, but is peculiarly susceptible to its contagion. When engaged the first time in nursing, she was in a few days attacked with sore-throat and fever, and a faint rash. Six years later, when she had nursed several children in scarlet fever of a very malignant type, she again had sore-throat and enlargement of the glands in the neck, with fever but no rash. The majority of my cases occurred during the first ten years of life, in the proportion of 44 out of 58.

Sex appeared to exercise some influence, more male children being attacked during the first ten years in the proportion of 25 males out of 44 cases. After the tenth year the susceptibility of females seems to be much greater than that of males, for of the 14 cases which occurred between the ages of 10 and 33 there were only 3 males, and these below 15 years, the other 11 cases were females. But even in females the susceptibility diminished greatly with advancing age, for among the 11 cases which occurred between the 10th and 33d year, 8 were in patients under 16.

It was generally found that the disease was lighter in proportion to the age of the patient. In this respect scarlatina presents a striking contrast to measles, which is, as a rule, lighter in the very young, and assumes a severe type in adults. The patient, whose case is marked in the table as having occurred in her 23d year, was a robust servant girl of florid complexion, her general health had always been good. She had no remembrance of having scarlet fever as a child, and did not believe she had had the disease. The attack was not ushered in with vomiting, but there was a slight rigor, and the temperature quickly rose to 105½° Fahr. The rash appeared late on the first day; it soon became uniform and of intense scarlet hue. There was but little throat trouble. The desquamation was excessive, and protracted to the sixth week. During the height of the disease there was slight albuminuria, but casts were not found at any time.

I have already mentioned the fact that very young infants are not so susceptible as children between two and ten years. In the family of Mr. G. two of the children had scarlatina, but the youngest daughter, an infant of about eighteen months, though brought in daily contact with the patients, escaped it. Mr. B.'s five children had scarlatina, but an infant about eleven months, who slept in the same room with two of the patients, and was in daily and close contact with them, entirely escaped. Many other cases of the kind might be adduced. A large number of individuals are not at all susceptible to scarlatinous infection, and may expose themselves to it without danger. In some this immunity is permanent, and lasts through life. In others it wears out, and the individuals, after having over and over again been exposed without effect, become all at once susceptible to infection, and contract the disease. In a majority of instances one attack of scarlatina destroys the susceptibility of the patient, and though he may afterwards often be exposed to the disease he never contracts it again. But almost every physician has observed cases of a second attack

of scarlatina in the same person, and a third attack even has been observed. These subsequent attacks are not always modified by the first, but may even exceed it in severity and the gravity of the complications. An illustration of this is seen in the following case:—

CASE III.—W. M., at the age of six years, had a rather severe attack of scarlatina, with marked throat trouble, coryza, and suppuration of the ear, and an extensive bronchial catarrh. After this he on several occasions came in contact with the disease, but did not again have it until he had passed through his twelfth year. The younger children in the family then suffered from a severe type of scarlatina, and he had the disease a second time, and came very near dying from scarlatinal nephritis. This case will be mentioned again later on. In another case the susceptibility returned much more quickly; the patient was a girl of ten years, and was the first in the family to contract it. Eight months later, after it had gone through the family, she had a second attack, so well marked and characteristic as to leave no room for doubt as to the correctness of the diagnosis. No other explanation of this second attack suggested itself than that the protective influence of the first attack having been exhausted, she became again infected by miasm, remaining in the house from the time when the other members of the family had the disease.

The miasm of scarlatina certainly retains its vitality and power of mischief for a long time, as will be shown by the following case, and I am aware that many other instances have been recorded in which infection occurred after a much longer interval.

CASE IV.—Mrs. —— with her son, aged 3 years, went to a watering place for a few weeks. She was assigned to a room which three months before had been occupied by a patient having scarlatina. Her child in a few days developed the disease, and died of it in a week.

The most frequent mode of infection, I believe, is by breathing the air of a chamber occupied by a scarlatinous patient, but it may also take place without direct communication with a person having the disease. There can be no doubt that persons may carry scarlatina to others without becoming affected with it themselves. Many cases of the disease in physicians' families originate in this way. A medical friend of mine thus became the medium of infection to his child. A good many years ago I was attending a case of scarlatina and a week later, my own child, who, as far as could be ascertained, had not been exposed to infection in any other way, became affected with the same disease. I have never been able to convince myself that in my own cases the miasm had gained entrance to the system in any other way than by the pulmonary mucous membrane.

The atmosphere may, however, I believe, be contaminated not only by the air exhaled by scarlet-fever patients, but also by the secretions, especially the urine, which, as already shown, contains large quantities of the miasm, the plax scindens. It is possible that the intestinal evacuations may also contain the miasm, but of this I have never satisfied myself; if

examination should demonstrate that they do, it is likely this excretion may also give rise to infectious emanations. The blood being charged with great masses of the miasm may of course in case of hemorrhage occurring in scarlatina become a medium of infection. On drying and becoming reduced to powder the blood easily gives up the miasm, which, being very minute, is carried by the atmosphere.

There still remains a large number of cases in which infection of the patient by another person having scarlatina, either directly or indirectly, cannot be assumed. These were, until recently, supposed to be instances of a "de novo" origin of scarlatina. It is to the elucidation of this class I would apply the study of the origin and nature of plax scindens, although it will be found that this study as shown by Eklund is capable of furnishing important indications for the prevention of scarlatina as well as of throwing light upon its origin and mode of propagation. But here again my own experience fails me, and I must quote the observations of my distinguished friend Dr. Frederick Eklund, of Stockholm. His researches have been so profound and exhaustive and are so pregnant with important practical results that I could hardly avoid alluding to them. It has been ascertained by him that the plax scindens is among the most common vegetable parasites found in the soil, in water, on mouldy walls, and on mouldy wall paper. He found innumerable masses of this parasite on making microscopical examinations of the soil and water of muddy places, and of the excavations dug for the purpose of laying water pipes.

Scarlatina immediately broke out among the children of a family living close to the place where the earth had been dug up in order to lay water pipes, and who could not help breathing the exhalations from the water evaporating from these excavations during the warm summer days. A child falls into the mud while playing, the soiled clothes are hung to dry and are afterwards beaten and brushed within doors; soon afterward he has an attack of scarlatina. The explanation is not doubtful. The parasite contained in the miry soil has entered the house, and has been set afloat in the atmosphere with the fine dust brushed out of the clothing. The air breathed by the child is laden with great numbers of it, and once within the organism its irritant effects in due time declare themselves. I regret that other duties have prevented me from verifying by my own observations these researches of Dr. Eklund, relating to the origin of plax scindens.

They certainly furnish a natural and plausible explanation of the origin of scarlatina, where, without it, one would be obliged to admit that this disease, at times, occurs independent of infection. This would involve the rather awkward assumption that the cause of a specific disease is sometimes specific and sometimes not. As previously stated, I have never seen a case where I thought the infection of scarlatina had entered the organism in any other way than by the lungs, but as suggested by Dr.

Eklund, the drinking of milk which has been diluted with water containing the plax scindens may well be admitted as a cause of scarlatina, especially since the published observations of Bell and Taylor, in England, have shown that scarlet fever may originate through the medium of infected milk.

The plax scindens multiplies by fission and belongs to the order of schizomycetes or cleft-fungi. Great warmth favors this process; it is therefore but natural that the heat in the interior of the body should furnish most favorable conditions for the rapid increase of the parasite when it has once gained an entrance into it, and the blood and secretions soon become richly charged with it and then with fine mycelial filaments.

It is held by many that the epidermic scales shed so abundantly by scarlet-fever patients during the period of desquamation contain the infectious principle of the disease, and some believe that it is most infectious during this period. My clinical studies do not confirm this view. When scarlet-fever has broken out in a family I have generally found that one or more of the other children were attacked before desquamation had begun in the person first taken sick. It has appeared to me that the infection was strongest during the height of the fever and during the period the parasite is found in largest quantity in the urine. The desquamation is a result, a sequel of the disease, and is commensurate with the antecedent inflammation of the skin. In other kindred diseases infection is most active while the morbid process is most intense, not after it has come to a close. It is difficult to say how long infection may linger about the person after he has passed through scarlet fever, and how long his immediate surroundings may continue charged with the parasite. I cannot believe that the epidermic scales contain it, for I have repeatedly subjected great numbers of them to microscopical examination without ever finding it. The plax scindens is so minute and is present in such large quantities that it may attach itself to clothing, furniture, wall paper, ceiling, carpets, books, etc., and one can well understand how easily it may adhere to rooms and persons, and how readily it may be wafted about by air currents and in that way spread infection, without invoking the shedding scales of epidermis to explain its propagation.

Pathology.—This embraces first, the morbid process, and second, the anatomical changes and the morbid phenomena or symptoms which result from them.

The morbid process in scarlatina is believed to be due to the irritating presence of the plax scindens, but the primary steps in this process are necessarily unknown. It is not possible to say with certainty upon what tissues or upon what system, whether vascular or nervous, the irritation is first exerted. From the fact that scarlatina is ushered in, generally, with symptoms of great disturbance of the nervous system, it may be assumed that the latter is primarily acted upon. Eklund (*loc. cit.*) believes that

the rotatory and terebrating motion for which the little parasites are noted could hardly avoid having a disturbing influence upon the vasomotor ganglia and the terminal filaments of the great sympathetic. But actuated by a prudent reserve, he forbears expressing an opinion whether this disturbance be of "irritating or paralyzing nature." That the blood is in some way altered by the presence of the parasite is probable, but whether directly or indirectly, or exactly in what manner, is unknown. The scarlet color of the skin is due to intense congestion and inflammation of this structure which may be presumed to be due to the irritant pressure of the parasite.

Fever as intense as the fever of scarlatina may be induced by an equally extensive and intense, but non-specific inflammation of the skin. But as the fever in scarlatina often precedes the cutaneous affection by twenty-four or even forty-eight hours, and as the latter may even be entirely absent, it is most likely they both depend upon a common cause.

Early development of the fever, its intensity, and with certain qualifications, its duration, are a measure of the energetic action of the parasite and of the profound implication of the nervous system.

The morbid process appears to be self-limited so that after running its course it comes to a close spontaneously. On its completion the organism, though in outward appearance restored to its pristine condition, will have undergone a more or less enduring change; for it is, in the majority of instances, no longer capable of being acted upon in the ordinary way by the scarlatinal miasm. What this modification exactly consists in, by what intimate alterations of tissues it is attended, is entirely unknown.

It requires a certain length of time for its accomplishment, and this length of time constitutes the duration of the disease, unless cut short by death or protracted by complications.

In estimating the duration of scarlatina I have deducted the fatal cases and complicated cases which recovered. This was necessary, in order to arrive at a correct view of the normal duration of scarlatina, the importance of which can hardly be exaggerated; for without this knowledge it is impossible to determine whether any particular plan of treatment influences the disease favourably or unfavourably, whether it shortens or lengthens its course.

Fifteen cases terminated fatally, and three cases which recovered had serious complications, making a total of seventeen cases which are to be deducted from the whole number of recorded cases. The duration of the remaining forty cases will furnish the average duration of scarlatina in its various forms, so far as any generalization may safely be based upon so limited a number.

The rule adopted by me in estimating the duration of the disease was to date its beginning from the inception of fever, and its close from the disappearance of fever with marked improvement in leading symptoms.

Perhaps it may be objected that the exact beginning of the fever cannot always be ascertained, and that therefore it would be better to count from the occurrence of the chill or the setting in of vomiting; but both these may be wanting, and the chill, especially, was frequently unobserved among the youngest of my patients. I have therefore preferred the rule mentioned above. According to this mode of calculating it was found that the average duration of the disease in forty cases was six and one-sixth days. The minimum duration in a very slightly marked case was three days; the maximum duration was fourteen days. The latter was an unusual case: the most careful and persistent examination failed to discover any complication, no local mischief ever developed, and the long duration of the fever, which was entirely uninfluenced by quinia, seemed to be entirely due to a more protracted blood poisoning. The child was in perfect health up to the time she was taken sick of scarlatina, and was unusually well developed and vigorous. A similar case, but in which the fever did not last more than ten days, occurred in a boy.

Pathological Anatomy.—Under this head I wish to present some facts collected by clinical observation, and others noted at post-mortem examinations. The former will be limited by the number of my recorded cases, the latter are necessarily few; for all my cases occurred in private practice, and an autopsy could but rarely be asked for, and was still more rarely permitted.

In studying this clinical material the cases were arranged in several classes, according to the grouping of symptoms. The old classification into three forms, S. simplex, S. anginosa, and S. maligna, did not appear altogether practical or satisfactory. Many cases occur which cannot be properly said to belong to the first variety, although the violence of the disease certainly appears to expend itself upon the skin, and those in which the kidneys are chiefly affected do not, properly speaking, belong to either of these three varieties. The cases were, therefore, classified as follows:—

A. The cases in which the skin affection was the most prominent feature. They differed widely, and were classed:—

1st. Those in which there was moderate eruption, and not excessively high fever.

2d. Those in which there was intense eruption and high fever.

3d. Those in which the eruption, at first simply a strongly marked scarlatina rash, became vesicular or later even pustular.

4th. Those in which the eruption was hemorrhagic.

B. The cases in which the throat affection was the most prominent feature. They were found to differ according to the degree of intensity of the throat trouble, the degree of fever, and the presence or absence of eruption.

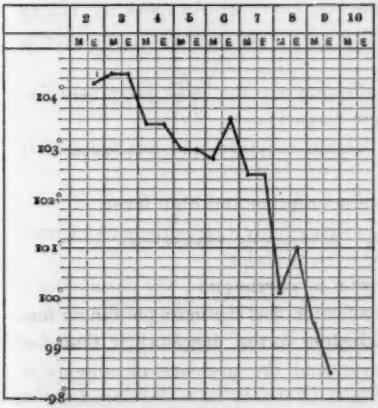
C. The cases in which pyrexia was the chief symptom, and in which the nervous system was profoundly implicated.

D. The cases in which the kidney affection was the most conspicuous feature.

On analyzing the cases, the class in which the skin affection constituted the most prominent feature is found to compose the majority, being forty-one out of fifty-eight. Of these forty-one cases twenty-eight were characterized by moderate fever and eruption, ten had intense eruption and high fever, one had an intense fever which became vesiculo-pustular, and two had intense fever with an eruption which I have designated as hemorrhagic, although there were no hemorrhages from internal organs, which have induced some writers to describe a variety of scarlatina under this name.

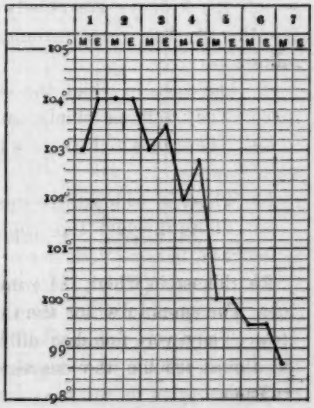
All the twenty-eight cases belonging to the first subdivision recovered, except one in which septicæmia occurred as a sequel. This case will be mentioned in detail later on. In eleven of them there was slight albuminuria during the height of the fever. The urine, however, contained neither blood-cells nor casts, and was not "smoky." The amount of albumen was very small, and was present only from twenty-four to sixty hours. As there was no other indication that the kidneys were implicated, the albuminuria was regarded as dependent upon some transient modification of the renal secretion but wholly unconnected with any inflammatory change in these organs. In only one instance among those who recovered did the fever continue after the rash had entirely passed away. This case has already been mentioned as lasting fourteen days.

CHART I. (A. T., æt. 7., moderate eruption and fever.)



1. Eruption.

CHART II. (H. B., æt. 8, moderate eruption and fever.)

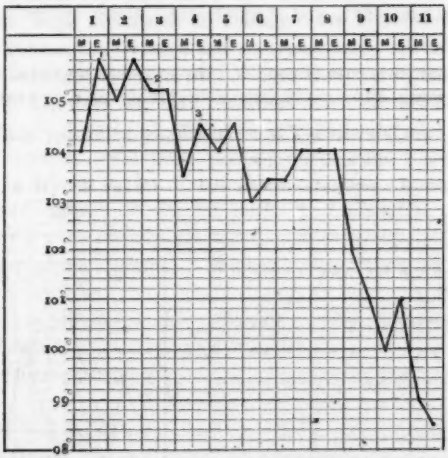


1. Eruption.

In fifteen cases the disease was ushered in by vomiting, and the temperature rapidly reached the fastigium. Drowsiness was noted in all the cases during the pyrogenetic stage. Spontaneous diarrhœa occurred in nine cases toward the close of the eruptive stage. In seven there was observed a more or less marked rigor, initiating the attack, but only in the older children. Temperature charts (I. and II.) are appended, illustrating the course of the fever in two cases belonging to this class.

The second subdivision, characterized by intense fever and eruption, includes ten cases, whose ages were respectively two years, four, six, six, six, eight, eight, twelve, twelve, and twenty-three. All these patients also recovered, but several had complications of more or less serious nature. W. M., æt. six years, had severe general bronchitis, inflammation of throat and ulceration of membrana tympani with protracted otorrhœa. F. M., æt. two years, had slight convulsion before the rash appeared. S. J., æt. four, had a moderately severe pneumonia and albuminuria without casts, and the pyrexia lasted ten days from day of first visit. The patient aged twenty-three years has already been alluded to. Charts giving range of temperature and duration of fever in some of these cases are appended.

CHART III. (S. J., æt. 4.)

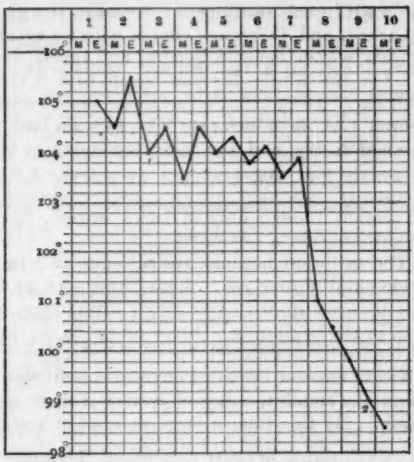


1. Eruption. 2. Albuminuria. 3. Pneumonia at base of lung.

In this case (Chart III.) the fever was intense, and the occurrence of lobar pneumonia did not seem to interfere with the progress of the disease, its accession was not marked by a higher rise of temperature than had been observed the previous night.

The eruption in the next case (Chart IV.) may have developed during the night of the second day, but was not observed until the morning of the

CHART IV. (Ellen C., æt. 15.)

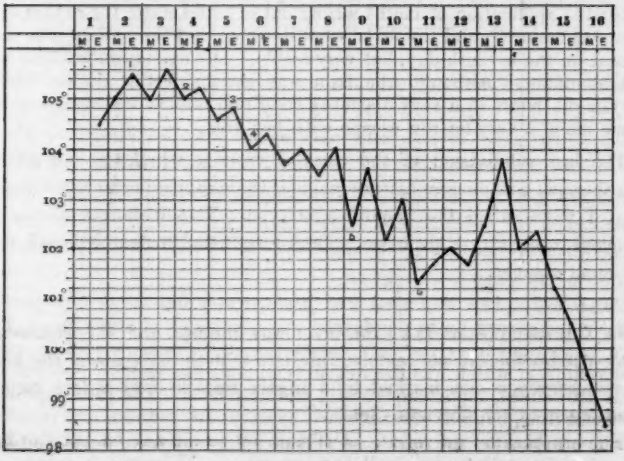


1. Eruption. 2. Desquamation.

third day. The eruption began fading on the seventh day, had disappeared by the ninth day, and desquamation set in by the tenth day, and was very abundant.

CASE V.—In this case (Chart V.) the eruption appeared on the second day in the evening, and soon became general; it was of intense scarlet color.

CHART V. (Case V. W. M., æt. 6 years. Intense pyrexia, quite protracted, complicated with angina, suppurative otitis, and general bronchitis.)



1. Eruption. 2. Throat affection. 3. Albuminuria.
4. Bronchitis. 5. Otorrhœa. 6. Desquamation.

The throat affection had become troublesome by the fourth day, and consisted of ulceration with great swelling of the tonsils, the glands in the neck were greatly enlarged, and there was coryza with an acrid irritating discharge. Bronchitis which became general and severe declared itself on the sixth day. On the ninth day pus began to flow from the external meatus of the left ear. Desquamation set in on the eleventh day, the rash having disappeared two days before. The pyrexia had not come to an end until the sixteenth day, and the convalescence was tedious and protracted; desquamation was excessive and continued for weeks. Hearing of left ear permanently injured by ulceration of membrana tympani. Albuminuria was present though only in small degree, beginning on the fifth day, and continuing for a few days.

CASE VI.—The eruption became vesiculo-pustular in one case only. This was a female child of four years, both father and mother unhealthy. The disease was ushered in with vomiting; drowsiness, transitory, and not very marked, in the beginning. Rash appeared on the second day of fever; it was attended by an unusual degree of itching, and became intense and general. At the close of the third day the patient was so covered that one could not find the smallest space of normal colour upon the integument of the trunk. By this time a large number of vesicles made their appearance, first upon the chest and abdomen, and then upon the sides and back. The extremities were not invaded to the same extent, yet numerous vesicles were scattered over their surface. On the fourth day these vesicles had assumed a yellowish tint and had evidently puriform contents, and the surrounding skin still retained the same intense scarlet hue. It was apparent that the functions of the skin were in abeyance and the little patient showed signs of approaching coma. There was some lividity of the lips, the finger nails became bluish, and it was impossible to keep her awake for more than a few moments at a time. The fever continued, the throat was not much affected, and the glands in the neck were not perceptibly enlarged. Albuminuria was present the third, fourth, and fifth days. The tincture of the chloride of iron was given internally, and under the application of cloths wrung out of tepid water the action of the skin was restored, and the fever went down so that the patient was convalescent on the seventh day, but very feeble. Desquamation was prolonged and abundant. Although the issue was favourable this patient was for forty-eight hours in a very alarming condition, and it has always seemed to me made a very narrow escape with her life.

The last subdivision of the class of cases in which the skin affection was the most conspicuous feature includes those in which the latter assumed what I have called the hemorrhagic type. Two instances of this kind occurred in my fifty-eight cases. Both terminated in death, though not in the same manner.

CASE VII.—Lee A., aged five years, was a fine large boy, perfectly healthy and strong up to the day he was taken sick of scarlatina. There were indications from the very outset that the disease would be severe. The vomiting, which was the initial symptom, was quickly succeeded by great drowsiness, high temperature, and diarrhœa. The rash appeared at the usual time, but was characterized by excessive redness, and in twenty-four hours became universal. Delirium set in already on the third day. The pulse was very rapid, small, and irregular. There was, however, comparatively little throat trouble. But the rash, in spite of the patient's

alarming prostration, became more intense, the hyperæmia of the skin was excessive, it assumed a purplish hue, the surface became rough and coriaceous, from infiltration; the epidermis became raised in thick scales not unlike ichthyosis, effusions of blood rendered the skin darker and thicker, and in some places were petechiæ. High pyrexia, profound ataxia, intense eruption, delirium, and diarrhœa were the most striking symptoms. The tongue presented the characteristic "strawberry" appearance, by some called "cat's-tongue," but it soon became dry, covered with sordes, and fissured. Death ensued from asthenia on the sixth day. In this case the patient was overwhelmed by the disease from the very first, and although the skin was the seat of the most conspicuous alterations, still the profound ataxia, uncontrollable delirium, and excessive diarrhœa showed how pervasive and violent was the action of the morbific agent.

Case VIII.—The other case was a boy, æt. twelve. The disease began without any indication of unusual severity. The rash was first noticed on the morning of the second day, with a temperature of 104° which, however, rose to 104½°, and, during the night, attained 105°. The rash simultaneously became more extensive and of a deeper red, until the hyperæmia reached the highest degree. The skin now became rough from partial detachment of epidermis by infiltration and effusion of blood, which latter made the skin still darker in places. In spite of full doses of salicylic acid and salicylate of soda, the temperature rose, and on the fifth day stood at 110°, when a sudden convulsion occurred, in which he died.

In this case the blood poison appeared to develop during the progress of the disease a steadily increasing virulence which expended itself upon the skin and excited a hyperpyrexia which proved fatal.

The second group includes the cases in which the throat affection was either the most or a very marked feature. Eight cases constitute this group, and they represent both very mild and very grave types of scarlatina and some of the most disastrous complications. The respective ages were 1 year, 1½ year, 4 years, 6 years, 8 years, 10 years, 11 years, 26 years, and 32 years.

The last two of these represent two attacks of scarlatina in the same patient, contracted while nursing scarlatina patients on two different occasions with an interval of six years between each attack. The patient had never had the disease during childhood. The first attack was characterized by fever, ulcerated sore throat, and an indistinct scanty eruption which appeared but for a day. The second attack was a veritable scarlatina "Sine Exanthemate;" no rash appearing, the sore-throat being however very well marked, with fever, headache, backache, and general prostration. Two other cases with diphtheritic sore throat recovered, after a long and tedious convalescence. The remaining four died. Girl aged one year six months died of asthenia in connection with diphtheria. Boy aged one year died of coma and asthenia with the most extensive infiltration of neck I have ever seen. This case has already been alluded to on page 22.

The third case occurred in a boy of ten; there was intense fever and

extensive infiltration of neck, the tonsils were excessively swollen, he died on the fifth day from œdema glottidis.

The fourth fatal case occurred in a girl aged eleven years. The inception of the attack was not attended with indications of the danger which soon crowded the brief record of her disease. It is true the temperature was 104½ and remained high, showing that it was not a light case. Severe sore throat developed with extensive infiltration, abscesses formed in both sides of the neck, which were lanced. Suppurative otitis set in and the little sufferer became deaf. Pericarditis and pneumonia successively occurred and the patient suddenly died from heart clot.

The third group was composed of cases in which intense pyrexia was the most conspicuous feature and the nervous system was profoundly implicated. They were six in number, and their respective ages were as follows; 1 year 11 months, 3 years, 3 years, 6 years, 6 years 6 months, 12 years. Every one of them died.

CASE IX.—The first of these was a girl 6 years old, of healthy parentage, and perfectly healthy prior to this illness. She had a few days before been exposed to contagion in school. In apparently perfect health she was observed to have fever, and all at once had convulsions, which continued to recur with great violence for six hours, at the end of which time she died. The fever rose with the progress of the disease, and had the thermometer been then in use, the temperature would probably have been found excessively high. There was no rash, and the fatal termination took place before the time for its appearance. After death the body was seen covered with extensive ecchymoses. The extreme violence of the disease expended itself in this case upon the nervous system, which was completely and fatally overwhelmed by it. It is the most rapidly fatal case of scarlatina I have ever seen, and the name "scarlatina fulminans" might be very appropriately employed to designate it.

CASE X.—Two other cases occurred in one family during a remarkably malignant epidemic. They were both girls, aged respectively 3 and 6½ years. The younger was first taken sick. The temperature was not excessively high at first, but did not in the least abate during the first four days. There was moderate sore throat with coryza and a very acrid discharge. On the fifth day the temperature rose to 105½°, and oscillated between this figure and 104° until the twelfth day, when she died. A rather pale and scanty eruption appeared at the end of the second day, but every trace of it had disappeared within forty-eight hours. The pulse was excessively rapid and feeble from the first, and, in spite of free stimulation, could not be improved.

CASE XI.—The older sister was taken sick several days later than her sister, and presented a typical case of scarlatina ataxica. Vomiting, followed by profound prostration, ushered in the attack; she was very pale, pulse too rapid to be counted, temperature 104°. No sign of rash could be discerned, and death took place in thirty-eight hours. In the younger sister high temperature and great disturbance of the nervous system contributed to bring about the fatal result. In the older, who had been up to that time remarkably healthy and strong, the temperature was not excessively high, and the disease did not last long enough for the effects of intense pyrexia to ensue. The disease seemed to act in a shock-like

manner upon the nervous system, which never gave the least sign of rallying from the onset to the close of the attack.

The fourth and fifth cases were similar to the one last described, though less rapid and intense.

CASE XII.—The older of these two, a boy, æt. 3 years, family history bad; had a faint rash; temperature 104° to 105°; died of exhaustion on the seventh day. The evidences of nervous prostration were marked from the first.

CASE XIII.—The younger, a girl, æt. 23 months, was suddenly seized with vomiting and fever, and in a few hours a faint rash appeared, which quickly receded. Temperature varied from 103½° to 105°; death ensued in seventy-two hours. Great pallor, small, excessively rapid, irregular pulse, and utter prostration were the most prominent features of this case.

CASE XIV.—The last in this group was a plump, rosy-cheeked girl, aged 12 years. The attack began with a chill followed by high temperature and a dry, burning skin. On the second day a typical rash appeared, and in twenty-four hours she was well covered with it. The temperature stood at 104½°, and under the use of salicylate of soda it fell to 102°. She manifested considerable excitement on the fourth day and complained of headache and intolerance of light. During the night she became wildly delirious. Acute meningitis had developed, and on the sixth day convulsions set in, and death ensued a few hours later.

The group in which affection of the kidneys was the most conspicuous feature embraces three cases, one of which was a girl, aged 4 years, the other two were boys, aged 5 years and 13 years respectively. The latter recovered, the girl and the younger boy died.

CASE XV.—On page 31 has been given a brief sketch of this boy's first attack of scarlatina, during which his throat and ears were seriously affected; he had besides a widely diffused bronchitis. In 1874 he had diphtheria, followed by paralysis of the soft palate and of the lower extremities. In 1875 two of his sisters had scarlatina of a malignant type and died. At this time the boy had a severe ulcerated sore throat, attended with considerable swelling both externally and internally, and voice and deglutition were greatly impaired. The fever lasted a week and reached 103°. No rash could be discovered at any time, though carefully looked for. The case was nevertheless regarded as scarlatina. By the end of the week he had become quite feeble, and his pallor was so marked and peculiar as to suggest renal trouble. His mother noticed that the eyelids were swollen of a morning, and this swelling speedily involved the face. The urine was smoky, very scanty, albuminous, and contained blood-corpuscles and epithelial casts. Pulse quick and feeble, bowels constipated. Two days later he had headache, muscæ volitantes, nausea, and frequent attacks of vomiting. During the night he was seized with violent convulsions and became comatose. He had altogether four convulsions. He was at once placed in a warm hip-bath, the feet were placed in hot mustard-water, and cold water was poured upon his head. The venous congestion diminished under this application, and there were some manifestations of returning consciousness. He was then placed in the cold pack, but not without difficulty, as he resisted with a good deal of force. Power of speech and deglutition having returned, an infusion of

jaborandi was administered in half-ounce doses every half hour. His language was wild and incoherent, but he had now become quiet. Profuse diaphoresis and diuresis were established by morning. Jaborandi was continued at longer intervals, and on the third day the urine was free from casts but still contained some albumen.

It might be objected that the renal disease was in this case a complication rather than a part of the scarlatinal process, but this can hardly be the correct interpretation of the facts. The external manifestations of renal trouble, viz., œdema, extreme pallor, etc., developed so close upon the throat disturbance that the anatomical changes in the kidneys, and the latter must have been going on simultaneously, and the renal affection evidently must have existed for some days before the uræmic effects already mentioned declared themselves.

The younger boy was not seen by me until a short time before he died; his case has already been mentioned on page 19.

CASE XVI.—The last case was the only female child in the group. Scarlatina had already attacked two other members of the family when she was taken sick. She was 4 years of age, had been of average health, and appeared to have considerable vitality. The fever was ushered in with a rigor, and rapidly rose to 104°; the rash was uniformly distributed over the whole body by the end of the third day; on the fourth day the urine was highly albuminous, and convulsions, preceded by vomiting, and rapidly followed by suppression of urine, set in on the fifth day. Death ensued on the morning of the sixth day.

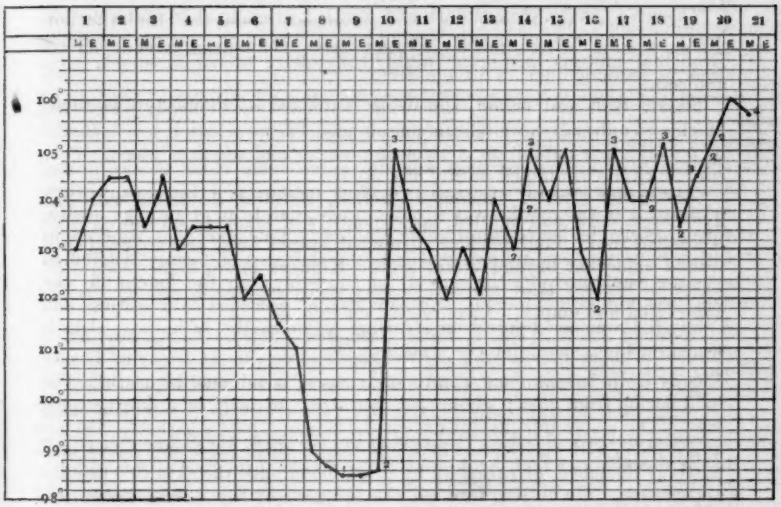
Fifteen, out of the total of fifty-eight cases, terminated in death. The following table setting forth the age, sex, type of disease, immediate cause of death, and day of death, will enable the reader to see the salient points in each case better than in the records scattered throughout these pages.

No.	Sex.	Age.	Type of disease.	Immediate cause of death.	Day of death.
1	Boy	1 yr.	Scarlatina anginosa	Coma and asthenia	6th day
2	Girl	1.6 "	" "	Diphtheria	7th "
3	"	1 1/2 "	" ataxica	Exhaustion	72 hours
4	"	3 yrs.	" "	Asthenia	12th day
5	Boy	3 "	" "	"	7th "
6	Girl	4 "	" nephritica	Uræmia and convulsions	6th "
7	Boy	5 "	" hemorrhagica	Asthenia	6th "
8	Girl	6 "	" fulminans	Convulsions	6 hours
9	Boy	6 "	" nephritica	Uræmia and convulsions	?
10	Girl	6 1/12 "	" fulminans	Collapse	38 hours
11	"	7 "	" anginosa	Septicæmia	3 weeks
12	Boy	10 "	" "	Œdema glottidis	5th day
13	Girl	11 "	" "	Heart clot	10th "
14	Boy	12 "	" hemorrhagica	Hyperpyrexia, convulsion	5th "
15	"	12 "	" nervosa	Meningitis	6th "

No. 11 among the fatal cases has already been mentioned. As seen in the table, the patient was a girl, aged 7 years, in whom the primary

disease ran a not very protracted course, and was not of unusual severity though of the anginose type. Several days after defervescence had taken place a series of abscesses began to form in the neck, the discharge from them became offensive; there was a recurrence of rigors at irregular intervals, the temperature rose, the pulse and respiration became very frequent, complexion was muddy, there was delirium and diarrhœa, and she died on the twenty-first day. (Chart VI.)

CHART VI.



1. Defervescence.
2. Chills and formation of abscess.
3. Quinia administered.
4. Died.

The mortality in the cases recorded may appear unusually large (15 out of 58), but it must be considered that many of these cases were recorded on account of their severity, or occurred during seasons when the disease was of a peculiarly malignant type.

Morbid Anatomy.—The observations upon the morbid anatomy of scarlatina which I have been enabled to make are embodied in the notes of six autopsies of children who had died of that disease. These examinations were necessarily incomplete, and some of them were very imperfect. They are appended with a full realization of their defectiveness, but yet with the hope that they may prove of some use, as the opportunities for such examinations are rather uncommon with us, and the need of more extensive pathological investigation is generally admitted.

Autopsy No. 1.—White girl, æt. 6. Examination made twelve hours after death. She had died after an illness of only six hours (No. 8, table of fatal cases). The body was covered with livid purple blotches, espe-

cially upon depending parts. On cutting into the skin it was found infiltrated with serosity over the back. Bloody froth was issuing from mouth and nostrils.

Cranial Cavity. Scalp was infiltrated with serum, and vessels on being cut gave forth more blood than usual. Great congestion of intra-cranial vessels, membranes highly congested, sinuses distended with black liquid blood. Brain substance softened. On cutting into it the puncta vasculosa appeared more numerous and larger than normal. Some fluid in aracnoid space of reddish colour, evidently from admixture with blood, but no rupture of a vessel could be found. Ventricles contained some fluid. Spinal cord not examined.

Thoracic Cavity. Lungs dark and mottled, œdematous in posterior portions; large amount of bloody, frothy serum flowed on cutting into them. Bronchial mucous membrane highly congested; bronchial glands large and soft.

Heart. Soft and flabby, somewhat distended with blood, which was black and unusually thin—heart muscle pale, except where it was darkened by post-mortem imbibition of colouring matter and serum of blood. Pericardiac cavity contained hardly any fluid.

Abdominal Cavity. Abdomen swollen, intestine distended with gas, liver large, dark and mottled, large quantity of black blood flowed when it was cut into. Gall bladder distended, spleen large and softened, protruded somewhat beyond costal arch. Kidneys large, highly congested, softer in texture than normal, capsule easily separated, urinary bladder contracted and empty. Case related on page 34.

Autopsy No. 2. (No. 7, Fatal Case, see Table).—L. A., boy, æt. 5. Fourteen hours after death; patient had died on the sixth day of disease. Bloody froth issuing from mouth and nares; a sanious, highly offensive fluid oozing from anus; whole posterior aspect of body of a deep purplish hue. The whole integument except the face of a rough bark-like feel and appearance, with ecchymoses here and there; thick epidermic flakes, edge partially detached, or raised up by dried blood gave the skin this peculiar appearance. On cutting through the integument the deeper layers and subcutaneous areolar tissue were seen infiltrated and œdematous. This patient's case has been related on page 32, as one of scarlatina hemorrhagica.

The cranial cavity was not examined.

Thoracic Cavity. Lungs congested, and œdematous in dependent portions. Bronchial mucous membrane swollen and congested, tubes containing frothy mucus; bronchial glands large and softened. The pericardium containing a small amount of reddish serum, bloodvessels coursing over its surface congested in arborescent patches. No fibrinous exudation; heart paler than normal when blood had been washed out of it, but at first it looked dark; muscular tissue in a state of granular degeneration; valves normal; blood imperfectly coagulated, black and viscid even in left chamber; blood cells were shrivelled and crenated, and the blood contained numerous bacteria and granular débris; liver large and congested; kidneys in the same condition; spleen less so; bladder containing very little urine of a dark colour; intestinal mucous membrane intensely congested and swollen, follicles very prominent, and here and there erythematous patches.

Autopsy No. 3.—This was a case which I had not seen during life, and in which a very incomplete examination was made twenty-four hours after the patient's death. The subject was a male about nine years of age.

There was no sign of eruption, but the skin was desquamating; the abdominal organs only were examined; liver and spleen dark, enlarged, and congested; kidneys large, and of a dark mottled colour, much blood flowed when they were cut into. The small quantity of urine found in the bladder was dark, albuminous, and contained blood cells, fibrinous and epithelial casts. Intestine distended in some parts, other parts contracted; Peyer's patches large, softened, and congested; here and there were erythematous patches.

Autopsy No. 4.—This was a boy 12 years of age, who had died under the care of another physician, through whose kindness I was permitted to be present at the autopsy. The skin was congested and discoloured in spots, especially on the back; lungs somewhat congested in lower and posterior parts; heart contained white, rather firm clots; aortic valves thickened, congested, and with fibrinous bead-like exudation on their free border; pericardium inflamed, and containing a small amount of serofibrinous exudation; kidneys congested; bronchial mucous membrane congested; left pleura had some fibrinous exudation.

Autopsy No. 5. (Case 1, Table of Fatal Cases.)—Boy about 1 year old. Sixteen hours after death: cranial cavity and neck were not examined, as positive injunction to leave these parts untouched had been given by the parents. Lungs were highly congested throughout; bronchial membrane in the same condition; heart distended to its full capacity with dark fluid blood. The neck was enormously swollen and indurated; there was no lesion of the skin visible; patient had died by coma and asthenia, the case has been reported on page 22.

Autopsy No. 6. (Case No. 4, Table of Fatal Cases.)—Girl, æt. 3 years; she died on twelfth day of disease of asthenia. Examined ten hours after death; no signs of eruption, skin exceedingly white, only very slight post-mortem discoloration posteriorly; muscular tissue showed granular degeneration, striæ here and there quite obscured or wanting; heart pale and flabby, and with comparatively little blood in its cavities; the blood was fluid in part, the clots were not very firm; there was but little pulmonary congestion except at base; the pleuræ and pericardium were not congested; liver, kidneys, and spleen were congested, bladder was full, and the urine contained some casts, and a little albumen. The mucous membrane of the stomach was congested in arborescent patches, and was swollen and softened; the lymphatic glands appeared larger than normal; the blood was viscid and dark in the abdominal vessels. This case has already been mentioned on page 34 as one of scarlatina ataxica.

Treatment.—Scarlatina is a self-limited disease, whose course there is no means of shortening, but which may be aggravated and protracted by too active and unwise therapeutic measures.

No specific remedy for the effects of the parasite has so far been discovered, no antidote to it has as yet been found, and no method is known to our art by which its departure from the body can be expedited, or its elimination be rendered complete.

The clinical history of scarlatina varies so exceedingly, and successive epidemics differ so greatly from one another, that until the peculiar parasite was discovered, the question was more than once asked if several different diseases had not been included under this one name.

In a large number of cases the disease is so mild that there is no need of treatment. In many other cases it is of such destructive violence, so abrupt in its access, runs its fatal course with such fearful rapidity, that the best efforts of even the most devoted and skilful will avail nothing. Yet there is a very large intermediate class, where the physician will find an ample field for the exercise of his art.

In entering upon this part of the subject two methods of dealing with it presented themselves. One was to give in connection with each case a detailed account of the plan of treatment pursued; the other was to simply set forth the conclusions which had been reached, and which appeared justifiable or actually demanded by my clinical experience. According to the former much repetition would have been unavoidable, with much waste of time and space. Besides, it would have been not only tedious and unprofitable, but impracticable, as all the clinical material has not been reported in detail. According to the latter, conciseness and perspicuity would be gained, and the experience gained in the observation and treatment of many other cases besides those forming the basis of this paper could be utilized; therefore this plan was preferred. In all infectious and contagious diseases, the physician's first care must be to prevent their further extension. This, it must be confessed, is not as well done as the importance of the subject demands. In private practice numerous obstacles present themselves, and it is fortunate for mankind that the infection of scarlatina is not more strong, and the susceptibility to it not so general as in the case of measles.

Prophylaxis.—This requires first of all the segregation of the patient whenever scarlatina breaks out in a family. Considerations of convenience, inadequate house room, lack of sufficient help in the house, so as to enable some one to give undivided time and attention to the care of the sick are practical difficulties which every physician will encounter, and which he will often find it impossible to overcome. The most remote chamber in the house should, other things being equal, be selected for a scarlatinous patient. It should be well lighted and ventilated, and the temperature should not be allowed to exceed 75° Fahr. Carpets, hangings, and all unnecessary articles of furniture should be excluded. The vessels used for the excreta should be disinfected and the contents should be speedily removed and destroyed. The walls should have no paper but ought to be painted and varnished, so that they can be easily and thoroughly cleansed. The bed linen ought to be changed daily, and immediately be subjected to a high temperature which destroys the vitality of the infecting agent. After the recovery of the patient, all articles of small value such as comforts and the like should be burned. The hair mattresses, and hair and feather pillows should be cut up, the covers destroyed, and their contents exposed to a sufficiently high temperature before they are made over again. The room itself, when the floors and furniture shall have been

thoroughly cleansed, ought to be shut up and thoroughly disinfected by means of burning sulphur, or the so-called "ozonizing powders" may be employed. The latter are composed of equal parts by weight of oxalic acid, peroxide of manganese and permanganate of potash; the mass is placed in a dish, or in dishes throughout the room, and moistened with water. This method of disinfecting the chamber is quite effective when enough of the powder is used. The doors, windows, and chimney must have been closed.

The clothing worn by the nurse should be burned, and the physician ought certainly not to visit houses where there are unprotected children immediately after leaving the sick-room of a scarlatinous patient. A long ride in the open air and a change of clothing appear to be a very reasonable precaution on his part.

It is highly probable that in future more wide reaching prophylactic measures may have to be enforced as we come to accept the doctrine promulgated by Eklund, and already mentioned in these pages. The possible origin of scarlatina by infection from domestic animals, and the admitted facts that infected milk, etc., may become the means of propagation of the disease, also admonish us that we do but ill fulfil our duties as guardians of the health and lives of communities when we content ourselves with simply prescribing for those actually sick of scarlatina, without investigating the origin of the disease, and endeavoring by all possible means to arrest its further propagation.

The use of belladonna as a prophylactic against scarlatina has long since been discontinued, as it has been shown by conclusive experiments to be entirely worthless. For several years I have prescribed small doses of salicylic acid for the prevention of scarlet fever. Although I believe it has some prophylactic power, yet I am far from certain as to its actual value.

The treatment of the patient should be based upon the consideration of his actual condition rather than upon the name of the disease. In the lightest form of scarlatina no medicinal interference whatever is indicated, and when resorted to at all is rather to satisfy the anxiety of the family to have something done. Some cooling diaphoretic with syrup of marshmallow, syrup of lemons, or syrup of red raspberries, properly diluted, etc., may under such circumstances be prescribed. Ordinary prudence as to diet, quiet, etc., should be enforced.

In the class of cases characterized by moderate eruption and fever, the following plan has been carried out with satisfactory results: The patient should be lightly clad, and not be permitted to have any worsted material next to the skin. Cool or cold drinks in small amounts and at short intervals are not only desired by the patient but are actually beneficial. The diet most suitable is milk; light soups or farinaceus preparations are also admissible. Lemonade is often very grateful to the patient and may

be taken cold. If the throat should be affected to such a degree as to make it necessary, the patient may be allowed to swallow small pieces of ice, and a cold water compress should be applied to the front of the neck from ear to ear. This will often reduce the throat affection in a few hours. When there is much itching and burning of the skin the surface should be gently anointed with olive oil. When the temperature runs up to 104° and over, and remains at so high a figure for any length of time, the external use of cold or cool water in some way should not be delayed. It is the most speedy, certain, and safe agent to accomplish the reduction and prevent the evils of protracted pyrexia. In the way of a prescription the following formula, modified according to the age of the patient and other circumstances, has often appeared serviceable: R. Potassæ Citratis, ℥j.; Syr. Limonis, f℥iij.; Spts. Etheris Nitrosi, f℥j.; Aquæ Destill. f℥j.; M. et S. Take one teaspoonful every 2 or 3 hours.

In some cases it may be desirable to combine a small dose of tinct. aconite, say half a drop, with each teaspoonful, to be repeated at appropriate intervals. Sleeplessness and nervous excitement may at times require the administration of Tully's powder, or bromide of sodium, and even chloral.

The use of purgatives beyond what may be necessary to keep the bowels in as nearly a normal condition as practicable is contraindicated. One must not lose sight of the fact that there is in scarlatina a strong tendency to inflammations of the mucous as well as the serous membranes, and in many cases a spontaneous diarrhœa sets in towards the close of the disease, which may easily be aggravated beyond what is desirable or even safe to the patient.

Large and spoliative doses of quinia and salicylic acid are to be avoided in this class of cases as not required and capable of mischief, if in no other way, by irritating and disturbing the stomach, and sometimes the bowels.

In the group of cases characterized by intense hyperæmia and high pyrexia, there is greatly increased heat production in the interior of the body, due to implication of the nervous system, while owing to the inflammation of the skin, the heat loss from the general surface is much diminished. The destructive effects of continued high temperature are not slow in manifesting themselves. Under such circumstances the first and most important indication is to reduce the temperature. To accomplish this safely and satisfactorily is not always easy. Salicylic acid, salicylate of soda, and quinia are the most potent agents by which the excessive generation of heat may be lessened. But there are general objections to them all, and there often are special reasons for not giving or continuing to give them in individual cases. To obtain their full effect they must be given in large doses, and the necessity for their administration speedily recurs. They are difficult of administration in very young patients, and their local effects are often irritating.

When given in full antipyretic doses they are spoliative in their action upon the blood and depressing to the nervous system. Hence in a disease consisting in a toxæmia with strong tendency to merge into an adynamic state, they must be resorted to with caution, and their administration must be regulated with sound judgment. I have found quinia the most safe of the three. When giving it at all, I prefer to give three or four large doses at an hour's interval, and then withhold it altogether. During the following twenty-four hours there is usually a fall in the temperature, and when the rise again becomes excessive the drug may be again given in the same way. The same plan will be found advantageous in administering salicylic acid and salicylate of soda. The former of these two is the least eligible of the group. Salicylate of soda has the advantage of being less irritating and unpalatable than the others, and it is often a good substitute for quinia in this disease and for the purpose named.

Of all the means to lower temperature, reduce the hyperæmia of the skin, and restore its activity, cold water is the best. It is strange that even at this late date the application of hydrotherapy to the treatment of the exanthematic fevers should still be regarded as an experiment, and that we should still remain in the bondage of the false pathological conception which regards the cutaneous inflammation of scarlatina as an eruption of peccant humours. It is now one hundred and sixty years since Dr. Hancock, Rector of St. Margaret's, Lothbury, England, published his pamphlet entitled, "Febrifugum Magnum, or Common Water the Best Cure for all Fevers," "which contains many sound observations and valuable facts detailed in the quaint language of the time." Ninety-five years have elapsed since Currie wrote upon this subject, and advocated the use of cold water in the treatment of scarlatina. From time to time others have again endeavoured to impress upon the medical profession the great fact that, as a febrifuge, common water is safe, certain, and expeditious in its action. Currie's rule for the use of cold-water ablutions in scarlatina was: "It is invariably safe and beneficial when the heat of body is steadily above the natural temperature, and when there is no sense of chilliness present, and no general and profuse perspiration." Bateman, however, found it sufficient to leave the following instruction with the nurse: "Use the cold-water ablutions whenever the skin is hot and dry." In spite of the teaching and example of these and many others, I doubt if many practitioners at present avail themselves of this important agent in the treatment of this and kindred diseases. My own experience with it has been so favourable that I am bound to speak highly of it, and on reviewing the history of many of my cases I regret that its use was not more frequently resorted to. The manner of application must necessarily vary with the age and condition of the patient, as well as with the type of scarlatina one has to deal with. In some cases immersion in a bath is the best, but this is not always practicable; in others, again,

the patient may simply be wrapped in a sheet wrung out of water at a temperature of 70° Fahr. In others, again, sponging the surface with cold or tepid water, or applying cloths wet with water of varying temperature may be preferred. In two of my patients, whose cases have been given in these pages, the results obtained by means of this agent were certainly most gratifying.

The variety of scarlatina in which the throat affection is the most conspicuous feature often presents great difficulties, especially in young children, who cannot make use of gargles, and always resist any efforts to make topical application of any kind. The swelling of the tonsils and fauces may sometimes be reduced and much relief given by letting the little patient suck ice, which is generally acceptable. The glandular swellings and infiltration of the neck can in many instances be controlled by the use of cold water compresses. When practicable, detergent gargles should be used, and perhaps chlorate of potash with dilute hydrochloric acid and honey dissolved in water is as good as any of the numerous formulæ in vogue at the present day. I have often seen good results from blowing powdered sulphur or benzoate of soda through a quill into the throat when the ulcerative stage has been reached. The early opening of abscesses when present, and the frequent syringing of the meatus with warm water when there is a purulent discharge from the ear, should never be neglected. Hot fomentations should always be applied when suppuration cannot be prevented. Beef-tea, wine, and the tincture of chloride of iron and digitalis are often demanded. The reduction of the temperature and pulse by means of depressing agents, such as aconite and veratrum viride, should never be attempted in this class of cases. The use of such agents is mentioned simply to discountenance it.

When scarlatina is of the ataxic type, with tardy and scanty rash, iron and stimulants are required from the first. I have on various occasions prescribed tinct. belladonna in such cases, but in general without much benefit. It was in this class of patients that Currie obtained such good results from cold affusion, and I have seen cases where the patient was apparently saved by this means. For it must be borne in mind that under such circumstances the temperature usually runs very high, although the skin may be pale and the extremities cold. "The stronger the action the quicker the internal reaction which ensues." (Seguin on Thermometry.)

It is true that extreme temperatures are powerful remedies that may kill or cure; but the class of cases to which I now refer strongly tend to a rapid and unfavourable termination, and it is believed that hydrotherapy constitutes the only hope in otherwise desperate cases.

Carbonate of ammonia has been much extolled as a remedy in scarlatina, and it would naturally appear specially indicated in the ataxic form of the disease, on account of its powerful action as a diffusible stimulant.

I have used it extensively, and have found that in the ordinary run of cases it is not needed, and in those of the most violent type it does no good. Besides it irritates the stomach, and promotes or aggravates diarrhœa, two very strong objections to its use. But it is of value in a certain class of cases in which there is bronchitis or pneumonia, and where the stomach is not irritable, and when there is no diarrhœa. The cases in which there is diarrhœa of any severity require the use of hydrotherapy, and are rarely controllable by any other means.

When the kidneys are involved, I have found the use of dry cups over the loins, the wet pack, and jaborandi to compose the most successful remedies. The case of W. M., reported in these pages, furnishes a good illustration of the beneficial results that may be achieved by the two latter. The infusion of jaborandi has appeared to me more reliable than the fluid extract, but pilocarpine is, under certain circumstances, preferable to either.

Scarlatina hemorrhagica requires a plan of treatment that will lessen the intense cutaneous hyperæmia, and tend to restore the arrested functions of the skin. Cloths wrung out of water at a temperature of 85° or 90°, aplied to the surface, and changed every hour or two, prove serviceable in this respect, and are both soothing and refreshing to the patient.

These cases soon show signs of exhaustion, and demand a supportive regimen from the very beginning.

In scarlatina fulminans no treatment does any good. The extreme violence of the attack, and the rapidity with which it proves fatal, afford no time for the action of remedies. Such cases are, from their very nature, hopeless.

ARTICLE II.

A CASE OF LODGMENT OF A FOREIGN BODY IN THE CAVITIES OF THE NOSE, ORBIT, AND CRANIUM, WHERE IT REMAINED FIVE MONTHS; REMOVAL BY OPERATION; SUBSEQUENT TREPHINING FOR PUS IN THE BRAIN; DEATH; AUTOPSY.

By HENRY D. NOYES, M.D., of New York.

LEWIS EVERETT AVERY, 19 years of age, living in Sullivan County, New York, a farmer in robust health, was wounded in the face by the explosion of a gun while shooting snipe at five o'clock in the morning of September 18, 1881. By the explosion, the lock of the gun was blown off, and also the piece called the breech-pin, by which the barrel is fastened to the stock. Most of the stock remained attached to the barrel. He was knocked senseless, and his brother, who was a little distance behind him, says that he heard something whiz past as the gun exploded. The boy was conveyed to his home in a wagon, a distance of half a mile, and remained unconscious about four days. A physician was called immediately after the receipt of the injury, who dressed the wounds, and said

that the right eye was destroyed, and also said—quoting from a letter from the boy's father—" that there was something there which he did not understand."

The patient did not vomit after the injury, and when he came to his senses he did not afterwards lose his mind, nor have any delirium. He remained in bed for four days, and was attended by the physician for about three weeks. He soon afterwards came to New York to get advice, and presented himself at the New York Eye and Ear Infirmary on the 5th of October, 1881. In the notes of the house-surgeon it is said that the eye was in a state of general inflammation, and that there was a large scar extending from the middle of the nose outwards and upwards along the inner third of the eyebrow. There was a fistulous opening near the inner end of the brow, and a probe struck upon a hard body, whose character was not verified, and then passed down towards the nose. The suggestion that the breech-pin of the gun might possibly have lodged there was emphatically dissented from by both the patient and his brother. Neither of them believed that it could be possible, and the brother asserted that he heard the breech-pin whiz past him at the time of the explosion.

The eye was in a condition of suppuration, and was treated by warm applications. A free escape of pus occurred from the sinus in the brow, from which also two small pieces of wood came away. The eyeball shrank, the swelling of the orbital tissues abated, the discharge both from the fistula and from the nose gradually decreased, and the patient returned home at the end of about three weeks.

Nov. 25. He returned to the Infirmary for inspection, and there had been a notable improvement in the appearance of the parts; healing had occurred very perfectly, his general health was good, his intelligence unimpaired, and he suffered no inconvenience.

Feb. 8, 1882. He came again to the Infirmary with a view to having some attempt made to repair the deformity of his face.

13*th.* He was intrusted to my care for the performance of a plastic operation. Not having seen him before, I examined him carefully and found his condition at that time to be as follows: He was a stoutly-built, unimpressible young man, rather slow of speech, apparently in good health, with a deep scar extending from the middle of the fractured and depressed nose along the inner canthus of the right eye upwards and outwards to about the middle of the brow. The upper lid was closed, the palpebral fissure was below the normal level, a fistulous opening existed (see Fig. 1) at the inner border of the eyebrow, the right eyeball was atrophied and immovably adherent to the tissues at the inner portion of the orbit, and from the nostrils there was an offensive discharge, which suggested the presence of carious bone. The nasal bones were badly sunken, and the tip of the nose turned up, as shown by the engraving. On exploring the nasal cavity, by the aid of a mirror and gaslight, a foreign body was discovered in the middle of the right side, which clicked like iron when touched with a probe. The finger passed through the mouth into the posterior naris, came in contact with this body, and the patient submitted to a pretty vigorous attempt at its extraction, when it was seized in front by a pair of strong polypus forceps, and pressed upon from behind with the forefinger of the other hand carried up behind the soft palate. The mass could not be stirred, and I was soon convinced that it extended into the orbital cavity. Nothing more was done at that time, and the case was reserved for operation on the following Friday, February 17. The inten-

tion was to remove the foreign body, and reserve any procedure of a plastic character for a future time. The precise extent and situation of the body was unknown. Its discovery had been a surprise. The patient was etherized. As a preliminary step, the patient being upon the back, the posterior

Fig. 1.

nares were plugged with sponges, a proceeding which was accomplished with considerable difficulty, but it was effectual, inasmuch as no blood whatever escaped into the throat during the operation. An incision was made through the scar in the middle of the nose, and the foreign body searched for at the inner side of the orbit. It presented at that point a squared surface about half an inch across, and when exposed was grasped by a pair of common pliers, which took a firm hold of it, but it was immovable. The dissection was carried further up along the brow, and the foreign body was traced upward, outward, and backward towards the roof of the orbit. It was proved that the foreign body was iron, not only by its appearance, but by touching it with an electro-magnet, and in subsequent steps of the operation the magnet was valuable as a means of distinguishing a bony surface from the foreign body when the parts were concealed by blood. The dissection towards the roof of the orbit was made mostly with scissors, guided by the forefinger of the other hand, and it was found that the mass disappeared through the roof of the orbit at its upper and outer angle at some distance behind the lachrymal fossa. At this time an extensive wound had been made into the cavity of the orbit and nose, and the ethmoid cells had been opened, but the foreign body was singularly hidden from view, below the margin of the orbit. In order to expose its lower part, it was necessary to clip away with bone-forceps the edge of the orbit, and at length its full extent was brought to view.

The explanation of the difficulties which were encountered at this stage of the operation is found in the peculiar form of the foreign body, as shown in Fig. 2.

Fig. 2.

The rounded end of the piece of iron, lying in the right nasal fossa, and pressing firmly against its floor, was now seized with the pliers, and gently lifted forwards. It was then caught in a line parallel to its long axis, and with great care very slowly extracted by pulling downwards and to the left across the median lines. It laid in such a position that the shoulder above the cylindrical part rested upon the floor of the orbit. The tapering extremity passed beyond the roof of the orbit to the distance of an inch and a half, namely, to near the place of the screw hole, where it was fastened to the stock of the gun. It proved to be $4\frac{7}{16}$ inches in length, or eleven centimetres; its breadth was about a half inch, or twelve millimetres, and its weight was two ounces, five drachms, and twenty-five grains, or about eighty-four grammes. The cylindrical portion is marked with a thread of a screw, and forms the chamber of the gun, and on one side is a hole, through which the nipple passes. In Fig. 3 the foreign

Fig. 3.

body has been inserted into a skull in the same position which it occupied in the patient. The frontal bone has been taken away, and is placed beside the skull. The round hole in the frontal bone denotes the place where, at a subsequent time, the trephine was applied to reach an abscess in the brain. The shrunken eyeball was next excised, and a free communication established between the apex of the orbit, where the foreign body had been lying, and the conjunctival sac. The wounds through the skin were adjusted, the palpebral fissure, by a little dissection, brought up

to its proper level, and the edges united by sutures. No other attempt was made to correct deformity.

When the foreign body was removed, the roof of the orbit was carefully explored with the forefinger, and the hole in it was so small that it just admitted the tip. When the operation was concluded, the finger, passed through the palpebral opening, could easily touch the aperture in the roof of the orbit. A tent was introduced between the lids back to this point. It was believed that by so doing a sufficient facility for drainage would be secured, inasmuch as the track of the body through the nasal cavity procured another outlet. The operation occupied rather more than two hours, and the hemorrhage was not severe.

It may be remarked that the deep situation which the foreign body occupied, not only concealed it from view, but from exploration by the finger, except in the nasal cavity. The patient had suffered no pain, was entirely free from dizziness, was unconscious of any inconvenience, except the discharge from the nostril and from the fistulous opening in the brow; his intellect was clear, his memory was unimpaired, and in every essential respect he considered himself well. The deformity of his face was the exclusive reason for his seeking advice. He was of resolute character and fair intelligence.

The reaction during the night after the operation was moderate. His temperature was 103° F., and pulse 100. The sponges which had been left in the posterior nares caused him serious discomfort, and they were removed. He was put upon tincture of aconite root one drop and a half every half hour, until eight o'clock the next morning, when his pulse was 90 and the temperature 101⅜° F. The tent was removed from the orbit, allowing some pus to escape. He had severe pain in the head, and iced applications were ordered. In place of the tent a soft rubber drainage tube was introduced. The aconite was continued.

19*th*. Second day after the operation. Pulse 72; temperature 98° F. Has slept well. Is comfortable.

20*th*. There is considerable swelling of the parts. The orbital cavity was well syringed out with a two per cent. solution of carbolic acid. There is only a slight discharge from the nose.

22*d*. At 6 A. M the temperature 99⅜° F., and pulse 72. At 4 P. M. the temperature 100½° F., and pulse 68. The tongue dry and covered with sordes. The bowels constipated. Ordered a saline laxative and sweet spirits of nitre.

23*d*. At 8 A. M. the temperature was 101½° F.; pulse 62, and irregular. The patient was drowsy and indisposed to talk. The tongue was covered with a dry brown crust, sordes upon the teeth and roof of the mouth. The patient had no appetite, and complains of pain in the occiput. Rubber bag filled with ice applied to head.

To-day the patient was seen in consultation by Dr. R. F. Weir. It was suggested that pus might be retained in the apex of the orbit, and an exploration of the parts through the palpebral opening gave vent to a small quantity.

The wounds in the skin had been opened on the *third* day, and gave vent to secretion, and to-day, the sixth day, the cavity of the nostril was easily accessible through the operation wound. In order to provide a more free escape of matter, a hard-rubber Eustachian catheter, considerably curved, was passed up along the track which the foreign body had occupied towards the roof of the orbit, and left in position. In the evening the

pulse was irregular and the lethargy continued. After some hesitation as to the proper course to be pursued, it was decided to give stimulants, and beginning at 8 P. M., a teaspoonful of whiskey was administered every hour until 11 o'clock. The ice-cap was continued to the head.

24*th*. The patient has experienced some relief from the measures employed, but his pulse ranges from 68 to 58, and his temperature from 100° F. to 99⅗° F.

25*th*. Temperature 99⅜° F.; pulse 54. Appetite improving, expresses a desire for fruit. His diet consists of milk, eggs, and beef-tea.

26*th*. Temperature 99° F.; pulse 52. Continues to take stimulants and milk. The wounds emit a fetid discharge. From the second day after the operation, the cavity of the orbit, the track of the wound, and the nostrils, were washed out with a two per cent. solution of carbolic acid two and three times daily, and great pains were taken to secure perfect cleanliness.

March 1*st*. Temperature 99° F.; pulse 60. Gave ether and made a free division of the tissues about the inner canthus, and passed a large silver probe along the track of the wound through the orbital plate into the brain and gave exit to some pus having a fetid odor. A curved hard-rubber Eustachian catheter was introduced as a drainage tube and left lying in the nostril and another one passed through the palpebral fissure.

2*d*. Temperature 99° F.; pulse 54.

3*d*. Temperature 99° F.; pulse 52. Feeling convinced that suppurative inflammation was taking place in the brain, with the assistance of Dr. John P. Gray, of Utica, Dr. R. F. Weir, Dr. T. T. Sabine, and Dr. E. G. Loring, ether was administered, the orbit entered by an extensive incision through the upper lid just below the brow, the finger introduced into the hole in its roof and the plate of bone broken away with forceps and a rongeur. The dura mater was crossed by a thickened band of tissue, and a feeling of fluctuation was distinctly recognized. The dura mater was freely incised upon the finger as a guide, and a small quantity of very offensive pus escaped. While giving the ether, it was noticed that the patient used the right arm in his struggles much more freely than the left, and this was the first time that any paralysis had been observed. Besides the pus removed by incising the dura mater, some fragments of bone were taken out. A soft-rubber drainage tube was passed through the opening in the roof of the orbit, and the outer end secured to the skin of the cheek by a stitch.

4*th*. The wound has been syringed out, the tube removed and cleansed and replaced three times a day. The patient complains of pain in the back of the neck, and right shoulder and arm. The paresis of the left forearm and hand remains unchanged. The bowels were moved by stimulating enemata. Poultices are being applied about the orbit. The patient eats ice-cream freely. From the 25th of February to this date the patient's lethargy has disappeared.

5*th*. Temperature ranges between 99½° F. and 100⅛° F.; pulse from 68 to 105, reaching 96 at midnight. Paresis of the left forearm and hand continues. Dr. E. D. Janeway examined the patient in consultation, and found the following symptoms, namely: paresis of the extensors of the wrist and fingers of the left hand, the grasp of the left hand twenty-five per cent. weaker than that of the right; supination and pronation weakened, but the extensors appeared to be more powerful than the flexors. The muscular power of the left leg was impaired, and during the examination

paresis of the left side of the face made its appearance. He thought that the lesion in the orbital convolutions had extended to the medullary matter of the *second* and *third* frontal convolutions, and that the paresis depended upon an œdematous condition of the medullary substance rather than upon a distinct abscess; the left half of the tongue was paralyzed as well as the face. The absence of all convulsive movements upon the paralyzed side was regarded as evidence against meningitis, and Dr. Janeway thought that the cortex was not involved. He regarded it as probable that an abscess existed in the vicinity of the place where the foreign body had been lodged.

At 3 P. M. consultation was held with Dr. H. B. Sands, Dr. T. T. Sabine, and Dr. L. A. Stimson, and it was decided to trephine the skull and search for an abscess. The place decided upon at which to open the skull was in accordance with the views Dr. Janeway expressed concerning the probable pathological condition of the brain. The patient was etherized and the trephine used at a point three inches above the external angular process of the frontal bone, just in advance of the coronal suture; this was in front of the middle meningeal artery, and intentionally anterior to the motor tract. The dura mater was not injured by the trephine. It pressed upward into the hole, but *no pulsation* could be observed. It felt firm and rather tense. A crucial incision was made through it, and the surface of the brain appeared slightly congested. An aspirating needle was carried downwards and forwards towards the orbital opening to the distance of one and three-quarter inches, at which depth a dark brown fluid appeared in the syringe followed by healthy pus, and this was succeeded again by a dark brown fluid. It was estimated that five drachms of purulent matter were removed. With one finger in the orbital opening, a probe was passed from above downwards to meet it, and a drainage tube was carried through the trephine hole down through the orbit, passing through the substance of the brain. A four per cent. solution of boracic acid was syringed through the tube three times a day, and its position changed.

6th. Temperature 100⅘° F. to 101° F.; pulse 90 to 78.

7th. Second day after the trephining. A probe was passed through the brain substance about an inch and a half, downward and forward, and gave exit to half an ounce of yellow pus which welled up. Poultices were continued to the side of the head. Five grains of the sulphate of quinine with half an ounce of whiskey were given every two hours until four doses were taken. Temperature 100° F.; pulse 98 to 103. The patient suffers great pain in his right arm and shoulder. Paresis of the left forearm and hand remains unchanged. The paralysis of the tongue and face seems to have been partially relieved.

8th. The wound was probed from above through the trephine hole, and about one drachm of pus removed. The quinine and whiskey were continued, viz., 20 grains of quinine and about two ounces of whiskey daily. The patient complains of difficulty of breathing upon the right side, and passed a very restless night. Wishes to be turned over frequently. There is little discharge from the wound, and the drainage-tube appears to be choked. It was removed and a larger one substituted. Temperature 101⅘° F.; pulse 100.

9th. The patient passed a comfortable night, and at six o'clock in the morning asked for beefsteak and a cup of coffee, which were given to him. At 12 M. the temperature was 104°F.; pulse 101. When the wound

was dressed the probe was introduced and considerable pus was liberated. He still complains of difficulty of breathing in the right side of the chest and pain in the right arm. Linseed poultices with mustard were applied to the back and chest. Careful examination does not discover any lesion of the lungs. A dose of salts was given. Ordered quinine in 10-grain doses. At midnight the pulse was 104, and temperature 101⅘°.

10th. Temperature ranges from 100⅗° F. to 103° F.; pulse from 101 to 90. The trephine hole is occupied by a mass of granulations and blood which was torn off, and some drops of dark-coloured pus escaped. All the dyspnœa and pain in the shoulder have disappeared, and examination of the chest reveals no lesion of either lungs or pleura.

11th. Temperature 101⅕° F. to 100° F.; pulse 90 to 98, reaching the highest point about noon.

12th. The patient examined in consultation by Dr. Janeway. The temperature 100⅕° F.; pulse 98. There is partial anæsthesia of the left hand, especially of the index finger. The sensation of the left leg is about the same as of the right. The grip of the left hand is about 25 per cent. less than that of the right. By striking over the tendons of the wrist and leg no increased reflex is noticed. Ordered 10 grains of quinine every six hours, with half an ounce of whiskey every two or three hours during the day.

13th. Pulse quick, feeble, and irregular. Considerable pus discharges from the wounds, and syringing into the orbital cavity causes the fluid to pass up through the trephine hole, indicating that free communication exists between the two openings, and the patient has been lying most of the time upon his left side and with the head thrown back. This position has made the exit of pus from the trephine hole easier than from the opening in the roof of the orbit. Temperature 100⅕° F.; pulse 94 to 120.

14th. Temperature 100⅕° F. to 99⅕° F.; pulse from 114 to 92. He continues to take 40 grains of quinine daily. Very early in the case the optic nerve of the left eye was examined and found to be œdematous, presenting the appearance of papillitis or choked disk; to-day it was again examined, and the condition found to be more pronounced, and hyperæmia more marked. The patient is perfectly intelligent, is in entire possession of his intellectual faculties, does not suffer great discomfort, and behaves well. The granulating surface in the trephine hole bleeds freely when touched.

15th. Temperature 99⅘° F.; pulse 92 to 112, reaching its highest point about noon.

16th. Temperature 99° F.; pulse 85. The patient has some frontal headache upon the right side. The quinine was reduced to 20 grains daily. He eats well. His diet for the preceding two weeks has been largely of ice-cream, of which he has taken from two to three quarts daily. Hearing and vision good. Paresis about the same.

17th. Temperature 99° F.; pulse 78 to 85, and slightly intermittent. Pus escapes from the orbital opening; water passes through both openings when the cavity is syringed. The left arm has become smaller and softer than the right. The patient complains of headache over the right frontal region, extending to the occiput. Ice bag applied.

18th. Temperature 99° F.; pulse 85 to 98. Ice-bag to the head continued.

19th. Temperature 99° F.; pulse 75 to 90. It was found upon ex-

amining the orbital opening that pus was retained in its vicinity, and by using a long probe bent to a sharp curve, it was discharged.

The paralysis of the left side of the face and tongue has for several days been very marked; but at no time has it affected the orbicularis muscle. The patient takes 20 grains of quinine daily.

20*th*. Shortly after taking a dose of whiskey the patient vomited. It was found that pus existed in the vicinity of the trephine hole, in the region posterior to it. After its removal the patient was more comfortable, and his pulse stronger and more regular. He now begins to be indifferent to the state of his bladder, and is apt to wet the bed. Temperature 99°F.; pulse 90 to 76, and irregular.

Since the granulations at the trephine hole have become redundant and inclined to bleed, they have been cut down with Jarvis's snare, armed with piano wire No. 7, and the subjacent brain tissue has been removed in the same way, thereby affording easier escape for the pus.

21*st*. Temperature 99° F. to 99⅘° F.; pulse 78 to 88. About one drachm of very offensive pus discharges from the openings at each dressing. The granulations are removed twice a day. Quinine and whiskey are continued. Syringing through the brain substance is no longer performed, and the probe is not used for evacuating the pus.

From March 22d to March 25th the temperature ranged from 99⅖° F. to 100° F.; and the pulse from 88 to 103. On the night of the 25th the patient vomited.

26*th*. The patient was restless during the early part of the night. He received three enemata during the day, but without effect upon the bowels.

Fearing that pus remained concealed and was unable to escape, I passed my finger through the orbital opening and found a pocket of pus. The finger went backwards to the distance of three inches, and found the brain substance badly broken down.

Dr. Janeway saw the patient again, but found no evidence of pyæmia or meningeal complication. The temperature of the brain taken by introducing the thermometer through the trephine hole was 101° F., in the axilla 100⅕° F. Pulse intermittent at times; 96 to 110.

27*th*. The patient had a restless night, and vomited three times within an hour. At the morning dressing, the wound of the orbit was full of disorganized tissue, which had to be removed by the snare, and a large slough soon followed, together with considerable pus. At the afternoon dressing I removed an additional quantity of sloughy material, and brought away a large necrotic mass, similar to that removed in the morning. The two together appeared to constitute the cyst which had inclosed the extremity of the foreign body in the brain. The slough was gray and fibrous upon one side, presenting a distinctly membranous character, and upon the other side was covered with broken-down white brain substance, with numerous points of capillary hemorrhage. The soft parts around the orbital opening have contracted together so as to interfere with the escape of fluid and with the dressing, and, therefore, the opening was enlarged by an incision upon its temporal extremity. The bowels have been constipated for some days, and no relief has been afforded by enemata. Ordered one drop of croton oil. Pulse very intermittent.

28*th*. Has had a bad night, and has nausea and vomiting. Free hemorrhage has taken place from the orbit, the cavity is occupied by a clot and granulations which protrude about one inch. When this was removed hemorrhage continued to occur, and was with difficulty arrested.

The patient is evidently much worse. Temperature 103⅛° F.; pulse 108. The temperature continued to rise, and at 10 A. M. was 104⅛°, and the pulse jumped to 160. During the day the patient gradually sank, and died at about 1 o'clock on the morning of March 29th, which was the thirty-ninth day after the removal of the foreign body.

He continued perfectly intelligent up to within *two* hours of his death, although indisposed to talk.

Hypodermic injections of whiskey were giving during the day, and beef-tea per rectum. There were no convulsions, nor additional paralysis, nor delirium. The patient could always be aroused, and did not suffer severe pain.

From the 6th of March to his death he was vigilantly cared for by Mrs. Dr. Pratt, of Salt Lake City, who performed much of the dressing and aided the House Surgeon, Dr. Charles Orr. He also had the constant services of two nurses.

The *autopsy* was made twelve hours after death, by Dr. W. H. Welch, assisted by Drs. J. L. Minor and Charles Orr. The following is Dr. Welch's report.

Autopsy.—By request only the head was examined.

External Appearances. The upper part of the nose is sunken in in consequence of depression and partial loss of the nasal bones. Immediately below the right eyebrow there is a gaping hole, 3 ctm. in transverse, 2 ctm. in vertical diameter. This hole extends horizontally along the upper margin of the upper eyelid, which is thereby somewhat depressed. This hole extends through the integument, subjacent tissues, and orbital plate of the frontal bone into the cranial cavity; the right eyeball is absent; there is a round hole ¾ ctm. in diameter, a little to the right of the median line of the nose, and on a level with the lower margin of the orbit. A probe can be passed through this hole into the nasal cavity; from this hole can be traced a line of cicatrix upwards to the gaping wound first described, and obliquely downwards for a distance of 3 ctm. to the left side of the nose. Another cicatricial line extends from the small hole for 3¼ ctm. along the right side of the nose to the nostril.

Near the roots of the hair on the right side there is an opening 2¼ ctm. in diameter through the integuments and frontal bone into the cranial cavity. This opening is situated 5 ctm. from the median line and 7 ctm. from the orbital margin of the frontal bone; around the margin of this opening, posteriorly and inferiorly, the bone is laid bare for a distance of 2 ctm. A ⅄-shaped cicatrix 5 ctm. long extends from the opening downwards towards the ear.

Brain and Membranes. Upon removal of the calvaria, openings are found in the dura mater which correspond in situation to those existing in the cranial bones. One is situated opposite the opening in the vertical plate of the frontal bone, the other corresponds to the opening in the horizontal plate of the same bone; around the margins of these openings, as well as elsewhere, the external surface of the dura mater appears normal. The dura mater presents no abnormal separation from what remains of the bones forming the floor of the right anterior fossa of the skull, being as usual here quite adherent. The superior longitudinal sinus contains a loose, decolorized post-mortem clot. The other sinuses contain reddish clots and fluid blood, but no thrombi.

Upon cutting through the dura mater on a line with the sawn surface of the cranium, this membrane is found to be without abnormal adhesion,

save around openings into the brain, which correspond in situation to the openings previously described in the dura mater and the bone; around these openings, which exist one on the convexity and the other on the orbital surface of the right frontal lobe, the dura mater is firmly adherent for a distance of ½ to 1½ ctm. to the subjacent pia-arachnoid membrane. These adhesions are such that fluids injected into the cavity formed in the frontal lobe (as described below), or escaping from this cavity, would not make their way into the surrounding sub-dural space. For a distance of 3 or 4 ctm. around these openings the inner surface of the dura mater presents the appearances of a hemorrhagic pachymeningitis. It is here coated with a thin yellowish-brown delicate membrane, which can be stripped up with the forceps, and which in places is adherent to the pia-arachnoid membrane. A short distance in front of the opening on the convexity of the frontal lobe a small, loose red coagulum of blood rests on the pia mater. Elsewhere the inner surface of the dura mater appears normal.

For a distance of about 2 ctm. around the openings into the frontal lobe the pia mater is of a yellowish color, and contains a few small ecchymoses. Elsewhere over the convexity of the hemispheres the pia mater presents a normal appearance. The pia mater covering the base of the brain, however, is acutely inflamed. Here there is a sero-purulent, yellowish-green exudation into the meshes of the pia mater, most abundant over the medulla oblongata, pons, inter-peduncular space, and inner parts of the fissures of Sylvius. This exudation is as much on one side of the brain as on the other, and does not extend to the convexity, where there is rather less than the normal quantity of fluid in the pial meshes.

The convolutions of the left cerebral hemisphere appear somewhat flattened as if there were increased intra-cerebral pressure. The lateral ventricles on both sides contain an increased amount of fluid rendered turbid by admixture of fibrin and pus, which also infiltrate the choroid plexuses. In each ventricle the fluid amounts to about 50 cubic ctm.

The right frontal lobe is somewhat sunken in. On the convex lateral surface of this lobe is a nearly circular hole about 5 ctm. in diameter, which opens into a cavity occupying the interior of this lobe. This hole involves the second and third frontal convolutions, which are thereby destroyed to a corresponding extent. The upper margin of this opening is 3 ctm. distant from the superior longitudinal fissure, its anterior margin is 3½ ctm. distant from the anterior margin of the frontal lobe, its posterior margin is 1½ ctm. from the anterior central convolution; the edges of this opening are thin and of a greenish colour, with here and there a few ecchymoses.

The orbital surface of the right frontal lobe is almost wholly destroyed. The gyrus rectus with the olfactory tract and bulb are, however, preserved. This opening into the orbital surface measures about 5 ctm. in diameter, both antero-posteriorly and transversely; the edges of this opening are likewise thin, discoloured, and beset with small hemorrhages. The distance between the lateral margin of the opening in the orbital surface and the inferior margin of that in the convexity of the frontal lobe measures 4 ctm. over the surface of the brain.

The interior of the right frontal lobe is destroyed and occupied by a cavity with soft, greenish, sloughy walls composed of the surrounding brain substance; the walls of this cavity measure from 2 to 8 or 10 mm. in thickness; the innermost part corresponds to the convexity and to the

orbital surface of the frontal lobe. This cavity extends backward so as to have undermined somewhat the anterior central convolution. The cavity communicates with the anterior part of the right lateral ventricle. The anterior part of the nucleus caudatus and the adjacent portion of the internal capsule upon this side are destroyed. The white matter of the parietal and temporo-sphenoidal lobes adjacent to the cavity is soft and white in colour. The change here resembles the so-called hydrocephalic softening observed around the ventricles in many cases of tuberculous meningitis, and usually attributed to post-mortem changes. The substance of the left cerebral hemisphere is moist.

After removal of the brain and membranes the opening in the orbital plate of the frontal bone is found to measure 3½ ctm. in antero-posterior, and 3 ctm. in transverse diameter. This opening extends backwards so as to involve the lesser wing of the sphenoid cavity.

The left optic nerve and the posterior segment of the left eye were removed and examined. The dural sheath of the optic nerve is markedly distended by an accumulation of clear serous fluid in the sub-dural space; the optic papilla is decidedly swollen, and presents ill defined contours and a hazy appearance. The central vein and its branches are large and distinct.

The brain, after removal, was placed in Wickersheimer's fluid, where it remained for ten days. It was then transferred to alcohol, in which it acquired a firm consistence, and still preserved nearly its normal colour; after hardening, two frontal sections were made through the hemispheres, one through the anterior central, and the other just behind the posterior central convolutions. The cortex and the immediately subjacent white matter of these convolutions appeared normal. The deeper white matter, however, namely, the foot of the corona radiata, where this latter passes into the anterior part of the internal capsule, is softened upon the right side, and contains several small hemorrhages. The anterior third of the right internal capsule, and a part of the nucleus caudatus is destroyed as already described. The motor tract affected, therefore, includes the anterior part of the internal capsule and the adjacent coronal expansion of its fibres into the centrum ovale. The anterior of the left hemisphere presents no lesions. Upon the hardened brain the sinking in and shrinkage of the right frontal lobe is more marked than it was at the autopsy.

Remarks.—In reviewing the case certain questions arise. *First*, whether the foreign body ought to have been removed? In general and in the abstract this question would require a careful adjustment of many circumstances—and a large material for study. The table of cases compiled by Dr. Wharton, in the *Philadelphia Medical Times*, July 19, 1879, is valuable as a list of references, but unfortunately offers few details. To this may be added the citations under the head of brain, foreign bodies in, and brain, wounds or injuries of, contained in the *Index to the Catalogue of the Library of the Surgeon General's Office*, vol. ii. p. 351 and p. 396. See *Deutsche Chirurgie*, Billroth and Lencke, Lieferung, 30; *Kopfverletzungen*, by Bergman, p. 76 *et seq.* See also the first vol. of *Surgical History of the War of the Rebellion*, from which an analysis of recoveries after lodgment of foreign bodies in the brain, has been made by Dr. John A. Lidell, in the *American Journal of the Medical Sciences*, April,

1881, p. 335, and article on Compression of the Brain, by Dr. S. W. Gross, *Am. Journal Med. Sciences*, July, 1873, p. 40.

With this material certain discriminations must be made as to the location, fixity, duration of residence of a foreign body, and whether it is exciting any irritative symptoms. The last circumstance is of great moment. In the above case no symptoms were present, and this may be attributed to the vigorous health and quiet temperament of the subject, to the absolute immobility of the piece of iron, and to the fact that the lesion was in the frontal lobe, which we know to be more tolerant of injuries than any part of the brain. It may be argued, and with reason, that with the missile undisturbed the patient might have lived for months or years longer. This case will deserve to be quoted in favour of expectant treatment. But it will be offset by a very large number of a contrary kind—when the field of research is fully explored. I think that in this argument the several points to which I have referred will all claim careful consideration. Such a discussion presupposes that the penetration of the brain by the foreign body should be known without any explorative operation. In the case of Avery, the invasion of the brain was not only unknown, but could not have been known without performing the explorative operation. This deep wound would doubtless have occasioned intra-cranial inflammation, and I do not feel any doubt as to the necessity of removal of the foreign body under these circumstances. In corroboration of this view it may be said that the orbital plate was found to have been fractured into the sphenoidal fissure and through that opening a very direct communication was opened to the brain from the explorative wound. The above remarks apply only to cases in which a foreign body has been lodged for a considerable period of time. There would seem to be no doubt of the necessity of extracting foreign bodies which are easily accessible, when they have only recently penetrated the skull.

Second. The fact that the wound was in the orbit causes special peculiarities. In Wharton's list of cases he says that in 18 the missile passed into the brain through the orbit, and that all but one of them were fatal. Berlin, in Graefe and Saemisch, *Handbuch der Ophthalmologie*, Bd. vi. th. iv. s. 599, says that of 52 cases of fracture of the roof of the orbit by penetration of foreign bodies, 41 died, *i. e.*, 80 per cent. He adduces, *l. c.*, page 638, four cases in which foreign bodies had remained for periods varying from forty days (*Demours*, 1818) to seventeen years (*Pagenstecher*, 1864), and had been extracted; both the above died, and the two others (reported by *Percy* and *Günther*) recovered. It is probable that research would discover more cases of this kind of injury, and afford us more data for deductions. Two circumstances seem to have importance in the great mortality of these cases. First, the soft tissues of the orbit choke the aperture in the cranium and prevent easy escape of discharges; second, the recumbent posture is unfavourable for drainage through this

locality, because the injury is at the base of the brain. These two disadvantages were strongly appreciated during the treament of Avery's case after the cerebral abscess had been opened. It was found that the posture which he constantly assumed, namely, on the left or paralyzed side, only imperfectly assisted the outflow of fluid; and, in fact, the trephine hole seemed a more ready outlet than that in the orbital roof. The great obstacle in the orbit was the continuous growth of new tissue, which encroached upon the external and on the bony openings. It would have been better if all the contents of the orbit, in addition to the eyeball, had been removed, the skin of the lids being left. A clean cavity would have made the dressing much easier. In view of the extreme danger which belongs to cases of wounds through the roof of the orbit, I think the suggestion deserves consideration whether a patient's chances might not be improved by excising all the contents of the orbit (*exenteratio orbitæ*), as soon as any tokens of cerebral or meningeal trouble appear. I know that the early symptoms are of uncertain value, and the proceeding might seem uncalled for if not dangerous. But in Avery's case it would have been better to have taken this step on the sixth day after the foreign body was removed. Better drainage would have been secured than by any of the devices which were assiduously employed for this object. Another obstacle, as it proved in Avery's case, was the cyst which had formed like a thimble around the end of the iron in the brain. This did not come away until the thirty-eighth day after removal. Inflammation began outside of it in the brain substance very early. The fluid products of inflammation were pent up outside of it, and could not sufficiently escape through the orbital hole. The only relief would have been a free incision into the dura mater and enlargement of the aperture in the roof by a small pliers or a rongeur. Another proposition intended to meet this difficulty has been made by Berlin (see Graefe and Saemisch), and was also suggested in consultation by Dr. Weir, namely, to chisel away the edge of the orbit for a breadth and depth sufficient to give ample access to the brain. This proposal arose on the sixteenth day, when the existence of a cerebral abscess was not doubted. It would have opened a direct approach to the abscess, and given an outlet not liable to be choked by growth of new tissue. Bergman, quoting Berlin, in *Deutsche Chirurgie*, Billroth and Luecke, page 249, says that the abscess in 18 fatal cases was superficial and close to the place where the bone had been fractured. Of the 18 cases, 15 had abscess of the brain, and only two had meningitis. The near vicinity of the abscess is a point to be remembered. In Avery's case the very free opening of the orbit on the sixteenth day in addition to the trephining, afforded what seemed an abundant means of escape for pus. This was furthermore promoted by using a drainage tube passed through the two openings. But the pulpy nature of the softened brain tissue clogged the holes of the tube, and they were left in position only

three days. It is not pretended that the most perfect provision for outflow of fluid will prevent an abscess from extending farther into the brain, and thus becoming fatal. But we certainly have to strive to remove all obstacles which tend to favour its extension. In the famous Harlow-Bigelow tamping-iron case, Dr. Harlow, in a private letter to me, says that is was due in great measure to the free outlets through the skull below and above that the man Gage owed his life.

Third. The final cause of death with my patient was inflammation along the base of the brain. It is probable that the pain on the right side of the chest, which appeared on the eighteenth day, was due to irritation of the pneumogastric. The abscess did not greatly derange his functions, except by the paralysis of the opposite side. His intellect was good, digestion and assimilation good. Certainly the quinine and stimulants had no injurious effects, but quite the contrary. On many occasions it was noted that the removal of pus would be followed speedily by reduction of temperature and by greater steadiness of the pulse. The close adhesion of the dura mater around the orbital opening and the trephine hole completely shut off the arachnoid cavity from the track of the suppuration, and no meningitis spread from these situations, neither could fluids used in syringing get beyond the parts intended to be irrigated. Trial was made of two per cent. solution of carbolic acid, but this excited so much headache that it was abandoned for a four p. c. solution of boracic acid.

For other sources of information in bibliography besides those mentioned in the text see :—

Mackenzie on the Eye, Am. Ed., 1855. pp. 49 to 72.
Chelius, System of Surgery, edited by South, vol. i. p. 436, 1847.
Demarquay, Tumeurs de l'Orbite, p. 240, 1860.
Verletzungen des Auges, Zander und Geissler, p. 224, p. 243, 1864.
Verletzungen des Auges, Arlt, 1875.
Pagenstecher in Monatsblätter für Augenheilkunde, Zehender, 1864, p. 166.
Ferrier on Localization of Cerebral Disease, p. 25.
Albert, Lehrbuch der Chirurgie, p. 104, 1881.

NEW YORK, 233 Madison Avenue.

ARTICLE III.

NOTES OF A CASE OF LODGMENT OF A FRAGMENT OF IRON IN THE SUBSTANCE OF THE BRAIN; DEATH IN FOUR MONTHS; AUTOPSY.

By GEO. BURR, M.D., of Binghamton, N. Y.

ON the 8th day of October, 1881, Leonard S. S——, a young man of about 20 years of age, residing at North Fenton, in company with another young man of about the same age, went out into the fields and woods for the purpose of shooting squirrels. They were armed with shot

guns, one of which was old, and had been made over so that caps could be used in firing it, by screwing into the side of the breech a tube communicating with the bore of the barrel. Into this tube, and standing at a right angle to it, was also screwed a smaller tube, called the nipple, on which the cap was placed. On firing this gun by S——'s companion, he standing near by, the breech of the gun burst, and both young men fell to the ground. They soon recovered, and S—— rose to his feet with a copious discharge of blood from a wound he had received, immediately above and near the centre of the zygomatic arch upon the left side. He was conveyed to his home, and a surgeon, Dr. C. W. Greene, of Chenango Forks, was called, who on examining the wound was satisfied that it was of a serious nature, and requested that I might be sent for. The next day, October 9th, I saw the case. The patient was lying in bed, perfectly conscious, complaining only of soreness in the vicinity of the injury, and some slight headache. None of the cerebral functions nor of the cranial nerves were involved or disturbed, with the exception of a slight defect in hearing in the left ear. His mind was unaffected, his recollection of the occurrence clear, his sight perfectly normal, nor was there paralysis of any of the nerves.

The statements made to us rendered it very probable that the tube or cylinder and nipple had caused the wound; but we could hardly believe that a very serious injury had been suffered, but that the missile, whatever it might be, must be outside of the cranium. Some efforts, therefore, were made to extract it by forceps, but these attempts failing, the patient was put under the influence of an anæsthetic, and the forefinger was passed into the wound. In doing this portions of brain matter escaped. On pushing the finger still further inward, a large opening was found in the cranial wall, through which the finger readily passed into the cavity of the cranium. No trace of the missile could be reached by the finger, nor found by any other means. The question of further surgical interference then presented itself, and we finally determined to make no further attempts to extract the piece of iron at that time. The patient soon began to rally, and within a week left his bed, and a few days afterwards was out of doors.

On Monday, the 23d of January, 1882, S—— called at my office, having driven a distance of at least twelve miles. He appeared well and hearty, had, however, a fistulous opening where the projectile entered, through which was discharging purulent matter. He said he was going to work again, and I afterwards learned did go to work cutting railroad ties. On the 21st of February he was taken with violent pain in the head, and in three or four hours died, having carried the mass of iron in the brain four months and thirteen days. The day before he had had a debauch, and was taken home in a wagon lying flat upon his back, stupefied from the effects of drink.

The brain was removed entire by Dr. Houghton, of Greene, and placed in alcohol reserving it for my inspection. The iron was found within the brain, and proved to be as at first supposed the tube and nipple of the gun. An accurate drawing of it of its actual size was made, and is reproduced with these notes. It was found in the anterior and inferior angle of the left middle lobe of the cerebrum in near proximity to the fissure of Sylvius. The cavity in which it was imbedded was lined by a distinct membranous cyst.

ARTICLE IV.

A CLINICAL STUDY OF THE DISEASE AND CURABILITY OF INEBRIETY.

By T. D. CROTHERS, M.D., Supt. of Walnut Lodge, Hartford, Conn.

IN 1878 there was admitted in the Asylum at Walnut Lodge, Hartford, Conn., forty-two patients suffering from inebriety and the use of opium. Of this number, thirty-five left the asylum with consent, the same year of their admission. On the asylum books they were noted as follows:—

Discharged recovered	10
Discharged greatly benefited	20
Discharged without results	4
Died	1
	35

It is proposed to study the history of these cases, and the results of treatment after a period of nearly four and a half years from the time of leaving the asylum. The history of each patient was recorded at the time of admission, based on his statements and those of his friends and relatives. The constant tendency to exaggerate and cover up the real facts by the patients, and sometimes their friends, required great care and frequent reconsideration of the clinical history, to exclude all sources of error. In many instances the facts were only obtained from long correspondence, close observation, and acquaintance with the patient. Each case was studied from a physical point, and all the mental phases recorded and analyzed as far as possible.

The first question was the evidence of an inebriate diathesis, or a special inherited predisposition to use spirits coming from the parents direct.

The number exhibiting this diathesis was eight, as follows: In two instances the father drank spirits to excess for years before and after the birth of the patient. In one case the father was intoxicated at the time of conception. In two cases the mother used wine and spirits before and

during pregnancy, and in two cases both parents used spirits to excess at times. In one case the history was obscure, but the indications were that both parents used spirits at different times, being free livers, and frequenting drinking society. In three cases the particular inheritance seemed beyond all doubt. In the next twelve cases the heredity was more removed, and less distinct, but still a prominent factor. In three cases the grandfather on the mother's side drank to excess; in four cases the grandparents were drinking people; in one case both grandparents, as far as the history could be obtained, were inebriates, and died from excess. In four cases insanity, inebriety, and consumption had been prominent in the grandparents. In eleven cases a defective brain and nerve inheritance was prominent, as follows: In seven instances, different states of monomania, paralysis, hysteria, and forms of persistent neuralgias, were present in one or both parents. In three instances insanity was present in the parents, with epilepsy in the father in one case. Thus in thirty-one out of the thirty-five cases there were positive inherited nerve and brain defects, which formed the active soil for the propagation and growth of inebriety. In the first eight cases, the probability of inebriety appearing in the next generation was almost a certainty, in view of the clinical history of the parents, and a knowledge of heredity. In the twenty-three cases which followed, the predisposition to disease was very marked, the form in which it appeared depending on some unknown factor. In the remaining cases, four in number, no history that was reliable could be ascertained of defective inheritance.

The second question was the general exciting or predisposing causes, apparent in these thirty-one cases.

In the eight cases where the inebriate inheritance was direct from the parents, inebriety began in three cases at puberty, following the evolution of the sexual function. In one case a positive pleasure in the taste and effect of spirits began at the age of seven years. Two cases appeared in which inebriety followed great grief and disappointment, in another instance domestic trouble was the exciting cause. The last case, the inebriety began from the excitement of success in being elected to an office of much honour. A brief outline of each of the twenty-three remaining cases will more clearly bring out the chain of causes, and make them better understood.

CASE 1.—A merchant; grandfather on mother's side an inebriate; had dyspepsia from bad living and over-work; began to drink after using alcohol as a medicine.

CASE 2.—A carpenter; grandfather and two uncles on mother's side died from excessive use of spirits; was temperate up to the time of entering the army; then began to drink to excess.

CASE 3 was a farmer; whose grandfather on the mother's side drank at intervals to great excess; he drank first after a period of severe exposure and hardship in the Maine woods.

CASES 4 AND 5.—Both merchants; the grandfather on the mother's side drank in one case, in the other the grandmother on the mother's side used opium and spirits. In both cases inebriety came on from business troubles and mental strain.

CASE 6 was a workman, whose grandparents on both sides were drinking people. He first used spirits after being employed in a distillery. From his own statement it was curiosity at first, then after he became intoxicated the first time he continued to use spirits.

CASE 7.—A liveryman; both grandparents drank; he suffered from what was called fits, in childhood, and used spirits at puberty after sexual excess.

CASE 8.—A builder and carpenter; inebriety in several uncles and aunts, moderate drinking in the grandparents; when ten he drank to intoxication, and had always a passionate love for the taste of spirits.

CASES 9 AND 10 were clerks and bookkeepers, with a strong insane tendency, which had appeared in nearly every branch of the family for generations back. The exciting cause was mental strain, overwork, and general neglect of healthy living.

CASE 11 was an editor; consumption and cancer had appeared in every branch of the family extending back to the great-grandparents. After a severe attack of pneumonia inebriety appeared; two years after the use of opium began, and alternated with alcohol for many years.

CASE 12 was a physician, with a marked history of insanity on the mother's side. Suffered from dyspepsia and extreme hypochondria, followed by inebriety, with acute mania after protracted drinking.

CASE 13 was very wealthy with no business; hysteria and epilepsy very prominent in all the generations back. Began to use spirits after an extended trip to Europe.

CASES 14, 15, and 16 were traders and merchants, whose ancestors were eccentric, strange people; with a history of dyspepsia, hypochondria, and hysteria. In the first case inebriety began after the death of his wife, in the other cases exposure in the army was the active cause.

CASE 17 was a lawyer; his father, grandfather, and two uncles had paralysis agitans when about forty years of age. After a severe business reverse he began to use alcohol to intoxication.

CASE 18 was a farmer, whose mother was a weak, passionate woman, always complaining, and using drugs for every trouble. He drank after an attack of typhoid fever.

CASE 19 was a saloon keeper; both parents low, selfish people. He drank soon after marriage, and lived a low, irregular life.

CASES 20 and 21 were persons without business; with insanity in the family, in grandparents and uncles; one dated all his drinking from the time of a shipwreck on a yacht and the rescue by a light-house keeper; the other drank soon after he began to gamble and spend his nights at faro.

CASE 22 was a clergyman; his father was a great gourmand and beer drinker. After a season of overwork and great excitement from a revival meeting he began to use spirits to excess.

CASE 23.—Of no business; father an epileptic; he began to drink after some trifling business trouble.

It is apparent from this outline of cases, that heredity was a prominent factor, traceable in nearly all the cases, and that the exciting and predis-

posing causes, were also exploding and developing influences, which determined the disease of inebriety. These exciting and predisposing causes can be traced in nearly all cases, and where it is not apparent, our knowledge and means of ascertaining it are at fault.

The third inquiry is, when inebriety begins does it follow some regular order that can be traced and anticipated in the study and treatment?

In a large proportion of cases this can be demonstrated beyond all question. In others much obscurity prevails, and a connected chain of symptoms cannot be made out from our present limited knowledge of the subject. The following cases represent the two extremes of symptomology and progress:—

In Case 13 hysteria and epilepsy prevailed in both branches of the family, and a marked entailment of nerve weakness and exhaustion existed. He grew up well and hearty until after leaving college, when he complained of exhaustion, and was very sensitive and easily excited. After marriage he visited Europe, and drank for the first time to intoxication. From this time he could not stop drinking, and during the next two years ideas of persecution appeared, and he became boastful and extravagant in his manner. Never would acknowledge that he drank to excess. Attempted to do business and failed. Became more and more excitable in his talk and actions. Tried to reform, and was sober two months after the death of his wife, then began to use spirits again. He was untruthful, and resorted to the most childish efforts to conceal his condition. He grew worse through every effort to recover, mind and body failing alike, until he was brought to the asylum. The order of the symptoms in the case ran as follows: Excitement of travel; wine drinking to intoxication. From this time the constant use of spirits, both wine and stronger alcohols, followed. The desire increased with each indulgence, and his mind grew more and more insensible to his real condition. Delusions of strength to control himself, and persecution from his family. Egotistical extravagance of action and work. Fitful unavailing efforts to recover, and loss of pride and faith in himself and others. General failure of mind and body, could not sleep unless he used large quantities of spirits. Increased use of spirits and increased debility of body and functional activity. The brain action in all these cases follows the fitful spasm-like movement of the heart. At times displaying force and energy, then relapsing into abject weakness. The mental failure and unsteadiness were more prominent than the changes in the body.

In Case 2 another type of symptoms and progress are seen. The inheritance from the grandfather on his mother's side, who died from excess in the use of spirits, was prominent. He was temperate and healthy up to eighteen, when he entered the army. Was confined to a southern prison for six months, and began to drink spirits soon after. He continued in the army until the war was over, and for the two years following

drank to excess constantly. Then he signed the pledge, and was very temperate for four and a half years, when, from the sudden death of his child, he relapsed, and for two years drank severely. Then he reformed and lectured on temperance for over a year, and relapsed in this work. Then recovered and relapsed again, coming to the asylum. A table of the progress of this case may be stated as follows:—

Began to use spirits from debility and exhaustion in the army, and was a continuous inebriate. He stopped by mere will-power, and four years later began again, and this time as a periodical inebriate. Then another sudden halt and relapse again, in the mean time engaging as a temperance lecturer; stopping in a manner equally strange. But each time he relapsed from some distinct cause; his mind exhibiting all the marks of degeneration seen in the former case. The mystery of the long halts, of uncertain duration, was certainly governed by conditions of physical and psychical laws, now unknown. These two cases are typical of a large class that often are not understood, and seem enigmas to their friends.

I have selected four cases, not mentioned in the above, for the purpose of showing a class of traumatic causes which have a marked influence over the progress and symptomatology. They are physical and psychical in their nature, and may be more clearly seen in an outline history of each case. Case 1. A lawyer, 38 years of age; no history of heredity could be obtained. Was in good health and temperate when he suffered from sunstroke. He was prostrated for many weeks with pain and exhaustion, and recovered a year after. After an exciting appeal to a jury in an important trial, he went out and drank to stupor. From this time the desire for alcohol appeared with great intensity after every period of exhaustion. His mind would foreshadow these attacks in the extreme egotism and boastful manners foreign to him at other times. Again he would manifest untruthfulness without motive. These and other mental phases were seen before and after a paroxysm of drinking, and at first disappeared during the free interval, then continued from one attack to another. Case 2, a clergyman, 48 years old, with probably an inebriate diathesis present. The death of his only daughter by an accident caused him, in despair, to drink to stupor. From this time, for fourteen years his life was a perpetual struggle to control an intense craving for alcohol, and failure to do so. His mind showed a great change; he became an infidel and spiritualist; his habits, character, and actions deteriorated steadily; the mind and body were in constant antagonism to procure spirits and escape from the bondage of this impulse. The mental symptoms clearly showed which was uppermost. In the asylum a study of this phase determined the question of the form of treatment at all times. Case 3 was a strong, vigorous farmer of 31 years of age. He suffered from a severe lacerated wound on both legs, from a runaway, followed by great mental excitement. He remained in bed for three months after; then he began

to drink to excess at once. His habits and entire character changed, and he became an unscrupulous speculator, and when not using spirits to excess, planned and executed great swindling operations. He would drink to stupor for a day or more, then recover, and use spirits moderately for a long time. Case 4 was a travelling man for a mercantile house, 39 years old. One evening a train he was riding on, jumped the track and dashed over the rails, breaking the windows, and causing intense consternation and alarm. The excitement was so great that he was functionally paralyzed, and had to be carried from the car. Two days elapsed before he was able to continue his journey. He used spirits to excess from this time, and went gradually down from bad to worse. Unlike many other similar cases, he had no delusions of strength, but seemed to have a decreasing faith and confidence in his power to recover. These cases were clearly traceable to traumatism. The second and last was from psychical changes in the brain centres. In all, changes of structure and function followed, of which inebriety was only a sign. It may be remarked that a large number of cases of inebriety may be traced to these traumatic causes, which are now overlooked in the prominence of the later symptoms. This is a field at present almost unknown.

In a grouping of the form of inebriety, and the prominent symptoms noted on admission, the following may give some conception of the difficulties in the study of the cases and their treatment. In the first division, the periodical inebriates who used spirits to excess only at certain stated periods, with a free interval of from two days to a year or more, were twelve. In some of these cases the history of this periodicity was of exceeding interest. In two cases the interval could be calculated within an hour, and the impulse for spirits burst out, irrespective of situation and surroundings, at the exact time predicted. In the second class were grouped all those who drank steadily, with no free interval of sobriety. These were called constant inebriates, and numbered sixteen; tremors, delusions, and insomnia were present in all these cases. In the third class, called paroxysmal inebriates, of which there were six, the condition resembled an attack of acute mania, in the suddenness of its onset and short duration, depending upon some special state of the nerve centres, which, after a few hours' excess in the use of spirits, recovered their control of the organism. Case 22 was of this type. He would drink to great excess for one or two days, then stop as suddenly as he began, and the interval of sobriety would be equally uncertain. In Case 19, a bar-keeper would reform, and remain sober a long time in his business, then relapse and reform again, without any special cause or reason. One case was closely allied with opium taking, so that neither was prominent, first one then the other.

The fourth inquiry is, What is the nature and character of the treatment in these cases?

Every case is suffering from congestions, degenerations, and nutrient

perversions of every description. In the treatment the removal of all exciting causes, and building up the general strength and vigour of the organism, is the first principle. An inebriate asylum is simply a quarantine, where this object can be most easily secured. Immunity from alcohol that is almost absolute, or as near as it can be, is one of the great essentials. To accomplish this, both modified and absolute restraint over all the surroundings and habits of the patient must be exercised, depending on the special wants and needs of each one. Restraint from alcohol is only one factor, and often an insignificant one; restraint from excitement, sexual excess, overwork, and many other influences equally powerful in the causation of inebriety, are absolutely necessary. In many cases the quiet, regular living and exact surroundings are a more effectual restraint from the use of alcohol than locks and bars. Hence all restraint must be adapted to the requirements of each case, and not depend on any one thing. In a periodical inebriate and dipsomaniac, restraint at times is positively injurious, at others it is a tonic of great value. The building up process must include all the means known to science for invigorating the organism, of which electricity, baths, tonics, mineral waters, and nutrients are most prominent. With this are included exercise that is pleasant and with full consent of the patient, mental diversion and change, as well as occupation of both mind and body. The inebriate is a thoroughly sick man, needing rest and perfect freedom from all sources of exhaustion, excitement, and debility. The mind requires more skill in the treatment than in cases of the insane, and the organic degenerations are more complex, taxing every resource of science to its utmost to combat. These means must be used for long periods, of not less than from one to three years, before any permanent restoration can be expected.

The fifth and last inquiry is, What were the results from the treatment of the cases mentioned in this article?

A period of four and a half years has elapsed since these cases were under treatment, and their present condition will approximately indicate the value and permanency of the results. Letters have been addressed to both the patients and their friends, and in some instances to the family physician, and the answers may be taken as more or less reliable. In seven cases the facts came under my personal observation, and are correct. Of the first ten cases noted on the books as discharged recovered, the following table represents their condition now and during the interval from the time of treatment. The word recovery was used on the asylum books as expressing a general restoration of the physical health and return of the mind to its normal condition, manifest in healthy thought and living, with an earnest desire and exertion to get well.

Cases who are yet temperate and well	4
Relapsed once, recovered, and now well	1
Relapsed twice after a long interval, now well	2
Relapsed and now drinking	1
Relapsed and died within a year	1
Relapsed and developed general paralysis	1

Of the twenty cases noted as discharged greatly benefited, four have disappeared, and no history or trace of them can be ascertained. It is probable that most of these cases have recovered or died; in either case all history would be lost. Had they relapsed they could be more easily traced. The rule is, that cases permanently cured disappear from observation, and never refer to their past life, while the chronic incurable stands about street-corners and saloons, advertising his failure to recover and the asylum to perform a miracle in his case.

Cases that are yet temperate and well	3
Cases that were temperate up to death	2
Cases which relapsed once, and are now temperate and well	4
Cases which have relapsed more than once at long intervals, now well	3
Cases relapsed and still drinking	3
Relapsed and died from the excess	1

Of those discharged as not benefited by the asylum treatment, the following is the present state:—

Relapsed and still drinking	2
Relapsed and now in an insane asylum	1
Relapsing at long intervals	1

During treatment one died from obscure affection of the brain soon after admission into the asylum.

The following table is a summary of all the cases:—

Those still well and temperate	7
Continued temperate and well up to death	2
Relapsed once, but now temperate	5
Relapsed twice or more at long intervals, now well	5
Relapsed and still drinking	6
Relapsed and died from excess	2
Relapsed and in an insane asylum	1
Relapsed and developed general paralysis	1
Relapsed at fixed intervals	1
Died under treatment	1
No history ascertained of	4
	35

The cases were under treatment from thirty-four days to six months, with an average of about four months to each one. In this time it is almost impossible to expect anything more than a beginning of permanent treatment. These results, in view of a knowledge of the difficulties of treatment, are very encouraging. Some of these obstacles may be mentioned as follows: All these cases had developed a low grade of chronicity, and exhausted every means of treatment before they came to the asylum, which is only a last resort. They come to these places credulous, and expecting results more or less miraculous, or skeptical of any good or power the treatment can give them. Hence it takes a long time to enlist the intelligent coöperation of the patient with the physician and the means applied. The treatment of inebriety had scarcely begun, and both the means and appli-

ances are sadly wanting in every institution. The full support by the public both legally and morally, with trained men to study and apply the means for treatment, are also wanting. Until such a time, when institutions are founded and conducted by experts, with every resource at command, similar to insane asylums, the difficulties of this work will be very formidable. The results of treatment to-day, with the worst cases, and the crudest means and methods of restoration only faintly indicate the possibility of cure in the future. The restoration of seven in thirty-one cases, after a period of four years and more, is an unmistakable sign of the eminent curability of inebriety, with better means, and larger knowledge.

In a general review of the facts gleaned from a study of these cases, and the results of treatment as seen at this time, I have great confidence in believing that the following propositions are correct, and will be confirmed in all future studies :—

1. Inebriety is a disease, which may be studied, traced, and understood, and whose course or march follows a progressive line, full of hints pointing out the means of cure and prevention.

2. Inebriety is curable as other diseases are, by the application of physical remedies in proper surroundings, by competent men, who seek to apply exact means to meet every case.

3. Inebriety must be studied from a physical point of view, as the result of physiological and psychical laws, and not a matter of chance, or a low vicious element in human nature.

4. Standing on the frontier lines, vast outlines of hills and valleys stretch out before us, all under the domain of law. When the traditional superstition, which hangs over this field, vanishes, and the causes of inebriety are known, as well as the means for prevention and cure, a new era of humanity and civilization will begin.

5. The increasing prevalence of inebriety in this country demands a scientific study of the subject, and a more thorough acquaintance with the laws and forces which govern its rise and progress ; from this a knowledge of the best means of treatment will be ascertained and applied.

ARTICLE V.

INDUCED SEPTICÆMIA IN THE RABBIT. By GEO. M. STERNBERG, M.D., Surgeon U. S. A.

THE object of the present paper is to compare the results obtained in some recently reported experiments upon rabbits (Report to the Scientific Grants Committee of the British Medical Association, by Peter Murray Braidwood, M.D., F.R.M.S., and Francis Vacher, F.R.C.S.Ed., *British*

Med. Journal, Nos. 1100 and 1101, 1882), with the writer's experiments made last year under the auspicies of the National Board of Health. (A fatal form of septicæmia in the rabbit produced by the subcutaneous injection of human saliva. *National Board of Health Bulletin*, April 30, 1881.)

These two series of experiments considered together give confirmation to the view, already entertained by high authorities upon clinical and experimental evidence, that there are two forms of septicæmia; the one a septic toxæmia due to the effects of a chemical poison or poisons evolved during the putrefactive decomposition of certain organic substances—especially of nitrogenous animal products—the other an infectious disease produced by the rapid multiplication in the body of the infected animal of a parasitic organism.

Of the latter form there may be as many varieties as there are species—or physiological varieties (Pasteur)—of bacteria which find in the fluids or tissues of living animals conditions suitable for development. The best studied and most widely known form of septicæmia due to the presence of a parasitic organism is the disease known as anthrax—*charbon* of the French, *miltzbrand* of the Germans—but several other varieties are now well established, in which similar symptoms and pathological results are produced by organisms morphologically different from the *Bacillus anthracis*. Among these may be mentioned the form of septicæmia in the mouse, so well studied by Koch, which is due to a minute bacillus, and the form of septicæmia in the rabbit produced by the subcutaneous injection of human saliva, due to a micrococcus, which has been studied by Pasteur, Vulpian, and by myself (independently). It may be that in both forms of septicæmia, viz., in septic toxæmia from the absorption of certain of the products of putrefaction, and in the infectious septicæmia due to the presence of a parasitic organism, the immediate and essential cause of the disease processes and results is the same, and that the organisms are simply the remote cause as producers of the poison, this being effected in the one case external to the body by an organism which does not find conditions favourable to its development in the interior of the animal, and in the other by one which is able to thrive within and at the expense of the fluids or soft structures of the living body. There is good reason to believe that organisms of the first class which habitually feed upon dead organic material, and require the presence of free oxygen may become habituated to changed conditions and acquire the power of invading living tissues, especially when these are enfeebled as the result of septic toxæmia, profuse loss of blood, wasting discharges, etc. But this is a branch of the subject upon which I shall not enter at present.

Whatever may be the *modus operandi* of the septic poison, or of septic organisms capable of reproduction within the bodies of living animals, there can be no doubt that all varieties of septicæmia are due directly or

remotely to the action of bacteria, for it is now well proven that putrefactive processes depend upon the presence, and vital activity of these minute vegetables.

The present state of science justifies us in formulating the axiom *no bacteria, no putrefaction*, and as animal and vegetable tissues subject to putrefaction exert no injurious effect—except in the case of poisonous chemical products evolved in the growth of certain plants—but, on the other hand, are essential for the sustenance of living animals, it is evident that in the end bacteria are responsible for all septic disease processes.

Observation and experiment indicate that septic toxæmia may be acute or chronic, according as it is produced by a single large dose or by frequently repeated small doses of the poison or poisons evolved during the putrefactive fermentation of organic substances; that death may result in a comparatively brief time from a lethal dose of the toxic agent; or, that it may occur at a later date as the result of secondary changes in the blood and in vital organs; and that the poisoning may occur through various channels, *e. g.*, (*a*) through the lungs by continued respiration of an atmosphere contaminated with emanations from putrefying material—filth; (*b*) through the mucous membrane of the alimentary canal when putrid matter is taken with food or drink, and probably also from the putrefaction *in situ* of imperfectly digested or unduly retained material in the *primæ viæ*; and (*c*) from the surface of suppurating wounds, from putrid purulent collections in any part of the body, and from decomposing secretions or discharges from any surface or cavity.

The experiments recorded by Braidwood and Vacher, *l. c.*, were mainly made with lochial fluid undergoing putrefaction, and their results indicate that they produced in the animals experimented upon septic toxæmia of greater or less severity.

The following *résumé* of results is given by the authors themselves.

Résumé.—SERIES A: Infected thirteen rabbits with a solution of lochia itself, or mixed with antiseptics.

Infected four rabbits and one dog with purulent fluid diluted.

Infected four rabbits with an aqueous solution of macerated muscle.

Infected two rabbits and one dog with grumous fluid from the peritoneal cavity.

Of these in seven instances (rabbits), and in two (dogs) recovery took place.

In eleven experiments, the animal (rabbit) was inoculated by injection through the vaginal wall.

In ten experiments the animals (eight rabbits and two dogs) were inoculated subcutaneously.

In three experiments the animals were inoculated by injection through the abdominal peritoneal cavity.

In four experiments the animal (rabbit) received the septic fluid applied to an open wound.

In one experiment the animal (rabbit) was inoculated by injection into a vein.

SERIES B: Infected fourteen rabbits and one dog with lochial solution by itself, or mixed with antiseptics.

Infected seven rabbits with purulent fluid diluted, or mixed with antiseptics.

Of these in nine instances (rabbits), and in one (dog), recovery took place.

In ten experiments the animals (rabbits) were inoculated by injection through the vaginal wall.

In six experiments the animals (rabbits) were inoculated by injection *per perinæum*.

In four experiments the animals (rabbits) were inoculated subcutaneously.

In one experiment the animal (dog) was inoculated by injection *supra pubem* into the abdominal peritoneal cavity.

SERIES C: Injected five rabbits with freshly removed peritoneal purulent fluid from a patient.

Injected two rabbits with freshly removed sanguineous peritoneal fluid from a patient.

Of these in the two last instances (rabbits) recovery took place.

In three experiments the animals (rabbits) were inoculated by injection through the vaginal wall.

In one experiment the animal (rabbit) was inoculated by injection *per perinæum*.

In three experiments the animals (rabbits) were inoculated subcutaneously.

The conclusions drawn by the authors from their experiments are summarized as follows:—

"We may then infer from our three series, consisting of fifty-four experiments: (1) that the fact of the septic fluid having been derived from a serous cavity, as the peritoneal, is not the cause of the septicity; (2) that the purulent condition (*de novo* or by admixture) intensifies its septic power; (3) but that pus alone is not necessarily septic to animals, as has been previously repeatedly proven by various experiments; (4) that purulent fluid from a serous cavity (especially that from the abdominal peritoneal cavity) is more lethal than that derived from connective tissue; (5) that putrefaction or decomposition decidedly intensifies the septic or lethal action of a septic fluid; and that (6) the septic influence of human lochia on rabbits is due to some special property in it (*sui generis*), and is not connected with the presence in it of micrococcus organisms."

If we contrast with these results those obtained by myself from the subcutaneous injection, in the rabbit, of human saliva, we shall find very striking differences, which may be summarized as follows: (1) greater mortality; (2) lethal dose much smaller; (3) date of death and pathological appearances quite uniform; (4) putrefaction of saliva destroys its virulence; (5) virulence is connected with the presence of micrococci; (6) serum from subcutaneous connective tissue and blood from an animal recently dead swarms with micrococci, and is virulent in the smallest quantities; (7) antiseptics promptly destroy virulence of saliva and of fluids from the body of infected animals.

I shall now proceed to discuss in detail, but as briefly as is consistent with the object in view, each of the above-enumerated points of contrast.

(1) *Greater Mortality.* The tabular statement of experiments made by Braidwood and Vacher shows that rabbits were inoculated with septic fluids, through various channels, 51 times, with a fatal result in 33 instances. In ten experiments antiseptic substances were mixed with the septic fluid used, with a fatal result in eight instances. In several cases the fatal result seems to have been due to an accidental complication. Thus, the notes of the experimenters show that in experiment No. IV., in which death occurred thirty hours after injecting one drachm of lochial fluid, *per vaginam*, into the pelvic cavity of a rabbit, the necropsy showed "a large clot in the right iliac region external to the muscles." In experiment V., in which the injection was made into the abdominal perito-

neal cavity, death occurred in eighteen hours, and the post-mortem examination showed that the intestine had been punctured by the hypodermic needle. In experiment VIII., it is recorded that the animal received accidentally a bruise over the right hip, which gradually induced a subcutaneous abscess. In experiment XXV. the remark is made: "Death probably resulted from an accident, as shown by the necropsy." Excluding these experiments we have left 37 with a mortality of 21. How far this mortality was dependent upon the fluid injected *as a septic fluid*, and how far it was due to injury inflicted by the hypodermic needle at the time of the operation, or to the mere presence of the fluid introduced into the pelvic or peritoneal cavities, it is impossible to determine, but it is evident that there is a greater liability to accidental complications in this method than in the method by subcutaneous injection into the connective tissue, employed by myself. The contrast as to mortality, however, is very striking. I say in my original report:—

"I have demonstrated by repeated experiments that my saliva in doses of 1.25 c. c. to 1.75 c. c., injected into the subcutaneous connective tissue of a rabbit, *infallibly produces death*, usually within forty-eight hours."

The number of experiments upon which this announcement rests I am not able to give at the present moment, as my detailed report of these experiments is in the hands of the National Board of Health, and I have not a retained copy at hand.[1] I think, however, that I am quite safe in saying that I have repeated the experiment at least twenty-five times with my own saliva. But experiments made subsequently to the writing of the above quotation from my original report, make it necessary for me to slightly qualify the language of this. I can no longer say *infallibly* produces death, as in several instances death has not occurred in rabbits which had been previously injected with saliva mixed with certain substances—alcohol, quinine—which, when added to it in a certain proportion, prevent the usual fatal result, but do not prevent an impression being made by the mixed injection, which seems subsequently to protect the animal from the lethal effects of injections of saliva alone.

I have not yet performed a sufficient number of experiments to enable me to speak with confidence as regards the protective influence of these mixed injections, but hope to pursue the investigation at some future time.

(2) In the experiments of Braidwood and Vacher the amount of septic fluid injected was from half a drachm to a drachm and a half. There is good reason to believe that this amount of pus, or of "grumous lochial fluid" introduced into the pelvic or peritoneal cavity of a rabbit might give rise to secondary deposits in the liver, etc., and produce death from causes quite independent of the septicity of the fluid injected. This view

[1] This detailed report, I am informed, will be published in full in the Annual Report of the National Board of Health for the year 1881.

is sustained by the remote period at which death occurred in a number of cases, and by the post-mortem notes, which show that secondary deposits in the liver, etc., were of common occurrence in these cases.

In my experiments the maximum amount of saliva injected was less than the minimum quantity of septic fluid used by Braidwood and Vacher, and there is good reason to believe that still smaller quantities would have been quite as effective, as *the smallest dose produced death quite as promptly as the largest.* In one experiment with small rabbits three out of five succumbed to an injection of one minim of saliva diluted with five minims of distilled water (each).

I beg those who undertake to repeat my experiments to observe that *my* saliva in the quantities mentioned produced the results recorded. The question as to whether the saliva of other individuals injected in the same manner would produce similar results is answered as follows :—

"The saliva of four students, residents of Baltimore, gave negative results; eleven rabbits injected with the saliva of six individuals in Philadelphia gave eight deaths and three negative results; but in the fatal cases a less degree of virulence was shown in six cases by a more prolonged period between the date of injection and the date of death."

Vulpian has since reported to the French Academy results corresponding with my own, so that it is evident that I do not alone enjoy the distinction of cultivating in the secretions of my mouth a micrococcus fatal to rabbits when introduced beneath their skin.

(3) In the experiments of Braidwood and Vacher death occurred at a later date than seven days in no less than 13 out of 21 fatal cases under consideration, and the pathological appearances noted are not at all uniform in character. In my experiments the rabbits were so commonly found dead or dying on the second morning after inoculation that I have come to look upon thirty-six to forty-eight hours as the duration of the fatal infectious disease produced thereby. The constant and characteristic pathological lesion found by me was a diffuse cellulitis, or inflammatory œdema, extending in all directions from the point of injection, attended with an abundant exudation of bloody serum swarming with micrococci.

Hemorrhagic extravasations in the subcutaneous connective tissue and in various organs were of frequent occurrence, and changes in the liver and spleen, such as are common to quickly fatal septic diseases, were commonly found. The spleen was usually greatly enlarged, and sometimes contained black pigment; the liver was frequently dark in colour, and gorged with blood, but more often of a leather colour, and containing much fat, resembling, in these particulars, the liver of yellow fever.

(4) Braidwood and Vacher find "that putrefaction or decomposition decidedly intensifies the septic or lethal action of a septic fluid." In my experiments putrefaction was found to destroy the virulence of the saliva. When this fluid was kept in a *culture* oven for twenty-four hours, at a

temperature of 37° cent., it developed an odour of putrefaction, and *no longer* produced any noticeable results when injected beneath the skin of a rabbit.[1]

(5) In my experiments, micrococci in great abundance were constantly found in the bloody serum from the œdematous connective tissue, and usually in the blood of rabbits just dead. By filtration and culture experiments proof was furnished that the virulence of these fluids depended upon the presence of the micrococci. Braidwood and Vacher find that "the septic influence of human lochia on rabbits is due to some special property in it (*sui generis*), and is not connected with the presence in it of micrococcus organisms." The latter clause of this proposition may be accepted upon the evidence furnished by the experimenters. But it may be questioned whether the septic influence of human lochia "is due to some special property in it *sui generis*." In the tabular statement of their experiments the authors make such remarks as the following, in referring to the lochial fluid injected into rabbits: "Had a slightly fetid odour;" "fluid very fetid, sanious and grumous;" "filled the sloughing wound with two pellets of cotton-wool which had been soaked, 70 *hours previously*, in fetid lochia from Mrs. G.," etc.

(6) Although the experimenters failed in certain cases to note the presence of the bacteria of putrefaction in the lochial fluid injected into their rabbits, as, for example, in the instance in which this is described as "very fetid, sanious, and grumous," there can be very little doubt that putrefactive changes had taken place, and there seems to be no good reason for assuming the presence of some "special property" differing from that found in other putrefying material of animal origin. According to my observations, the vaginal mucus of healthy females contains an abundance of bacterial organisms, and it is quite probable that, under the favouring influence of an elevated temperature, the lochia is usually more or less advanced in putrefaction before it reaches the vaginal orifice, especially when the flow is scanty, and a well-closed os tends to the retention of the fluid within the uterus. The lochial fluid as it escapes from the uterine vessels is probably bland and harmless, not differing materially from blood-serum, and holding in suspension a certain number of the corpuscular elements of the blood. In the serum present in the œdematous connective tissue of a rabbit killed by the injection of saliva, we have a fluid similar in its origin—from the blood—and in its physical characters so far as the naked eye can discern. But the microscope reveals in it the presence of innumerable micrococci, and experiment shows that a minute quantity introduced beneath the skin of a healthy rabbit will produce speedy death. I have in a number of instances, and as often as the experiment was tried,

[1] My saliva is odourless, and has the normal reaction. I am not aware that it presents any peculiarity unless it be that it is secreted in unusual abundance. My teeth are sound, and I do not use tobacco.

produced fatal septicæmia in a rabbit by introducing beneath its skin a hypodermic needle dipped in the blood of a rabbit just dead as the result of an injection of saliva.

(7) Finally, in the experiments of Braidwood and Vacher, in which antiseptics were mixed with the septic fluids injected into rabbits, the mortality was increased by this admixture, showing that these so-called antiseptics—carbolic acid, sulphurous acid, potassium permanganate—did not neutralize the poisonous septic element in the fluids used.

On the other hand, a series of experiments made by myself to test the comparative value of disinfectants[1] has demonstrated conclusively the power of these and many other substances generally recognized as antiseptics, to destroy the virulence of blood and serum from a septicæmic rabbit killed by an injection of human saliva. The proportion required differed with different substances and was considerably greater for carbolic acid and potassium permanganate than for iodine, ferric sulphate, and the mineral acids, being less than 0.5 per cent. for the latter, while 1.25 per cent. of carbolic acid, and 2 per cent. of potassium permanganate was required to disinfect the virulent fluid used in my experiments. The proportion of these disinfectants used by Braidwood and Vacher was considerably in excess of this (5 per cent. of carbolic acid and a saturated solution of potassium permanganate), indeed, the quantity injected was so great that it is difficult to decide whether the septic fluid or the antiseptic agent mixed with it was responsible for the death of the animals experimented upon.

In my experiments with disinfectants the result was very striking. In 46 instances the subcutaneous injection of virulent blood and serum from septicæmic rabbits, mingled with various antiseptic substances, gave negative results, whereas the virulence of the same fluids was demonstrated by comparative experiments in which a much smaller quantity was used, and by 35 experiments in which inefficient quantities of efficient antiseptic agents or solutions of substances which proved to be inert, were mingled with the virus. Thus carbolic acid failed at 0.5 per cent., but was efficient at 1.25 per cent.; potassium permanganate failed at 1 per cent., but was efficient at 2 per cent.; potassium nitrate and sodium chloride failed at 4 per cent., etc. etc.

[1] Board of Health Bulletin, July 23, 1881.

ARTICLE VI.

RUPTURE OF THE LEFT FALLOPIAN TUBE AND COPIOUS HEMORRHAGE INTO THE PERITONEAL CAVITY. By J. F. HARTIGAN, M.D., of Washington, D. C.

CASE I.—Mrs. S. T., coloured, æt. 33, mother of five children, youngest sixteen months old, menses irregular since its birth; was seized on the morning of September 12, 1881, with a sudden sharp pain low down in the abdomen; menstruation was a month overdue, and she remarked that this was perhaps its beginning; such belief was heightened the next day by a normal show which lasted up to death; there were no symptoms of pregnancy. She was well up to this time except that, her husband says, a few nights before in bed she felt cold and chilly, although the room was very warm, and requested him to put the window down; also, when he was leaving the house to go to work the morning of her attack, she expressed a desiré to lay aside her laundry labours and take two weeks' rest.

When the pain seized her she had a cup of coffee in her hands getting breakfast; it continued growing worse, and felt, as she said, like labour pain. She, however, kept going about, complaining all the time, and would occasionally sit and lie down and go to work again; her strange conduct and actions in the mean time excited anxiety, and two days before her death great pallor was noticed, and she talked in a rambling way, indeed, as her sister said, she felt and looked as if she would die.

This state of things continued until the morning of the 17th, when she caught herself and exclaimed, "Oh, Lord! my stomach, that pain that I have been complaining of for a week is almost cutting me in two." She lay on the floor on her abdomen, steadily grew worse, and was then carried to a lounge. Dr. Winter was summoned, who soon afterwards found her unconscious in collapse, death ensuing about 5 P. M.

At the *autopsy* the next day the quantity of blood in the abdominal cavity was amazing; becoming satisfied that no large vessel was ruptured, some difficulty was experienced in learning the source of the hemorrhage. After sponging out the abdomen this was discovered by a clot protruding through what appeared upon examination, as the specimen shows, a rupture of the left Fallopian tube on its superior aspect, irregular in shape, one-fourth inch long, and an inch from the uterus; there was partial dilatation and attenuation of the walls of the tube in its middle; the finest probe would not penetrate the ostium internum; the ostium abdominale was open. The uterus was enlarged, five inches long, and empty, its rugæ, however, and lower garments of the woman, were found slightly tinged with the menstrual flow before referred to. There was also a true corpus luteum, of a dusky hue, included, perhaps, in one-sixth of the left ovary. Other organs normal.

The interest attached to the specimen led me to examine into its literature through the unsurpassed facilities of the index catalogue of the Army Medical Library; I am also indebted to Dr. Lamb and Mr. Z'glinitzki for translations.

CASE II.—The first reference to this subject, although not exactly an analogous case, is found in De Haen's *Ratio Medendi*, vol. iii., 1764, p. 31. The patient, who was 24 years old, had never menstruated, but had since the age of sixteen suffered with a hard swelling in the hypogastrium, which formed in the beginning an extremely hard but uniform zone around the umbilicus, and finally encompassed

the entire abdomen. After eight years of acute suffering it was discovered that she was afflicted with atresia. In 1761 an operation was determined upon by means of an incision into the hymen, when a great quantity of black blood escaped followed by death in a few hours.

The *autopsy* showed enormous moles of the uterus, and both sides of the monstrous tube formed together one solid mass that filled the whole hypogastrium. The abdominal cavity was filled with black, turbid, offensive fluid, which proved to have issued from small apertures of the decayed tube.

CASE III. (*Journal Universel des Sci. Medical*, Paris, vol. xxx., 1823, p. 100.)—Dr. Godelle reports a case, married, of rupture of right tube, supposed to have occurred in a rage, at the time of menstruation.

CASE IV. (*Sommaire des Trans. de la Soc. des Sciences Méd. du Dept. de la Moselle*, Metz, 1830-8, p. 63.)—Patient, æt. 38; no children; rupture of left tube three weeks over expected period. What appeared to be decidua was found in uterus. Rupture believed to be result of arrest of ovule in the tube.

CASE V.—A case is reported by William Munk, M.D., in the *London Med. Gazette*, vol. xxvii., 1841, p. 867. Patient, æt. 18, was found in articulo mortis, and died in a few hours; had never menstruated. Eighteen months before, at puberty, she suffered from headache, pain in the back and limbs, cold extremities, and dragging sensation in pelvic region. These symptoms soon subsided, but returned in five weeks; again ceased and then returned after a shorter interval. This state of things continued three or four months, the symptoms upon each recurrence remaining longer, whilst intermissions became shorter, so that at last there was no intermission but exacerbations occurring every fourth or fifth week. In January the lower part of the abdomen began to swell; pain in the pelvis, vomiting, and all the symptoms aggravated. In a few days, when stooping, she felt something give way within her, and the swelling and pain subsided temporarily. She died in four days.

Autopsy showed a large quantity of dark-red thickish fluid in the abdomen. Uterus larger than a man's fist and flaccid. On opening it found three or four ounces of same kind of fluid. Fallopian tubes distended so as to admit the little finger. A fissure about two inches in length was found near the fimbriated extremity of left tube, accounting for hemorrhage.

CASE VI. (*Casper's Wochenschrift*, 1846, Berlin, p. 325.)—A case is reported showing rupture of left tube six weeks after menses; patient was 37, married, and had children. The author attributed rupture to tubal pregnancy. A coagulum resembling a mole was found in uterus which was enlarged on ruptured side. Ostium internum closed.

CASE VII.—In the *Provincial Med. and Surg. Jour.*, London, 1848, p. 104, a case is reported by Mr. Russell, presented before the Birmingham Pathological Society, showing rupture of the left tube, supposed during the passage of an ovum, in a young newly married woman two weeks after menstruation. Mr. R. found her in collapse, abdomen tympanitic and tender; she referred her pain chiefly to præcordia; died in a few hours.

At the *autopsy* blood was found in abdomen and pelvis; the rupture was near junction of middle and inner third, the walls of ruptured portion thin and distended by a mass of fibrin in which no ovum was discoverable. Uterus enlarged and contained a deposit of decidua.

CASE VIII. (*Gaz. des Hôp.* Paris, 1847, p. 155.)—Case 36 years old, one child. The right tube was ruptured and dilated to the size of finger—tube contained clots—bloody mucus in uterus. Some days before death, had attendant catamenial discharge.

CASE IX.—*In the Bulletin de l'Academie de Médecine*, Paris, vol. xxi., 1855-6, p. 21, a case is reported during catamenial flow, æt. 39, mother of four children. Left tube was found ruptured at junction of inner third with outer two-thirds; the internal third for half its length was dilated and contained a blood clot. No tubal pregnancy. No trace of blood in uterus.

CASE X.—In Warren's *Surgical Observations*, 1858, p. 292, a case, æt. 40, is reported of rupture of left tube from retained menstrual fluid on account of occlusion of the uterus. There was no communication between tube and uterus. Patient had a very severe confinement four years previously, and had not menstruated since.

CASE XI.—A case is reported in the Extracts from the Records of the Boston Society for Medical Improvement, by Dr. F. Minot (*Boston Med. and Surg. Journ.* vol. lxiv., 1861, p. 249).

Autopsy, by Dr. L. R. Stone, showed rupture of the left Fallopian tube and copious effusion of blood into the peritoneal cavity in a non-pregnant woman. Patient was 19 years old, and had one child a year and a half old. The morning she was seized she got up as usual perfectly well, and dressed her child; went out a few minutes, came back and threw herself on the bed, complaining of pain in the abdomen, coldness and thirst, feeble pulse, and great pallor. She died the same evening. About two quarts of blood was found in abdomen; uterus not enlarged. Fallopian tubes more injected than the uterus, but neither of them was distended nor discoloured. The left tube in its upper and posterior part, midway, showed an opening through its entire thickness, about one-quarter of an inch long, and from this opening there hung a coagulum. Nothing like an ovum was anywhere found. The tube having been cut open it was found it could be inflated from the fimbriated extremity, and pass a probe in from the uterus to near the seat of rupture, but nothing more was observed than would be seen in the unimpregnated condition. There was a large spurious corpus luteum in left ovary, and a smaller one in the right. There was a glairy mucous secretion in the cavity of the uterus, and profuse leucorrhœal discharge in the vagina. The catamenia was always regular, and the sister, who slept with the patient, reports that she was not menstruating at the time of her death, but was daily expecting to.

CASE XII. (*Medicins Correspondenz Blatt.*, vol. xxxiv., 1864, p. 110.)—Dr. Lechler reports a case 28 years old; married 8 months; healthy; menstruated regularly, period five days overdue; thought she was pregnant. Was attacked suddenly after sleep while making her bed, and died in a few hours. At the autopsy there was observed great anæmia, and a large mass of blood in abdomen; left tube distended to size of walnut, with thin walls and blood clot; rent in anterior upper side. Uterus that of a virgin, healthy and empty. No trace of ovum was found.

CASE XIII. (*Trans. N. Y. Obst. Soc.*, 1876–8, p. 156.)—A specimen, taken from a lady æt. 30, was presented by Dr. H. D. Nicoll, showing rupture of the left tube. She suffered from retroversion for several years; had had two children within two years before death—labours normal. Last menstruation occurred two weeks ago and was scanty. Since that time she had slight abdominal pains. On the morning of her death, immediately after sexual intercourse, she experienced a sudden violent pain in the lower part of the abdomen, followed by syncope and unconsciousness; was pulseless at the wrist. A vaginal examination revealed distinct fluctuation in Douglas's cul-de-sac. She rallied a while after restoratives, but again became collapsed and pulseless, dying in 12 hours from attack.

Autopsy showed abdominal cavity absolutely filled with blood, chiefly coagulated, both ostium internum and abdominale open. Viscera anæmic. The uterus was large and the mucous membrane tumefied, and ovaries contained each a corpus luteum. The rupture took place half an inch from uterus; tube was swollen to the size of a hazel-nut, the opening being one-quarter of an inch long on the posterior aspect, and containing coagulum.

The pathologist, Dr. M. D. Mann, after describing the conditions found, concludes as follows: "We are forced by the resemblance of this to other described cases, by the presence of the corpus luteum, and by exclusion, to consider this as a case of tubal pregnancy. The absence of the ovum, and the failure in the development of the uteri decidua, usually seen in these cases, may cast some doubts on the diagnosis. But we can easily account for the absence of the ovum by supposing that it was expelled through the rent in the walls of the sac at the time of the hemorrhage and lost among the clots. We cannot imagine any other conditions which could have produced similar results. Disease of a vessel with apoplexy, an ulcerative action in the mucous membrane opening into a vessel, formation of an abscess in the tube, with subsequent rupture, are all easily excluded, on account of the healthy condition of the other tube, and the remaining portion of this."

CASE XIV.—Dr. A. E. A. Lawrence reports the following case in the *Trans.*

Obst. Soc. London, vol. xx., 1879, p. 292. Patient was admitted into the Bristol Gen. Hospital, suffering from endometritis, and for this he applied nitric acid to the interior of the uterus, after previously dilating the cervix with a tangle tent. The woman did well for four days, when peritonitis set in, and she died in three days. The *post mortem* showed peritonitis most marked in pelvic region. The left Fallopian tube was dilated into a cyst, the right was much dilated and thickened, and had given way; the interior of the uterus presented usual appearance of granular endometritis. The doctor did not attribute the fatal termination to the acid application; but he believed the immediate cause of the rupture was probably due to over-distension by menstrual secretion. Menstruation was coincident with the development of peritonitis.

CASE XV.—In the *Lancet* for 1879, vol. ii. p. 120. By Henry Fisher, M.D., rupture of both tubes is reported during labour. Woman 40, and feeble, temperate, and healthy; 5 children.

CASE XVI.—In the *Lancet* for 1880, vol. i. p. 525, a case is reported by C. J. R. Owen, M.R.C.S. Patient aged 39; married 20 years; had 4 children, youngest 21 months; no miscarriages; taken ill Jan. 8, 1880. Had rheumatic fever when young, but heart was not affected. Catamenia began at 14; natural every 4 weeks, latterly every 3 weeks; has lately grown fat, and her strength was severely taxed from nursing a sick child; last period was natural, but ever since has suffered much from pains in the back and stomach. January 7th she thought her period had come on, but as there was only a slight show, concluded it had passed off. Next morning she had been reaching about a good deal, when she suddenly felt "something give" in her right side, and fainted away. In the afternoon when she was first seen, she had been very sick, and only recovered from one faint to go into another. In the intervals she was sensible, and complained of severe pain in right iliac and hypochondriac regions, not increased by pressure. Face and hands cold and moist; no pulse in radial, carotid, or temporal arteries. Tongue clean, pale, and flabby; heart's action intensified; no bruit; chest normal, also abdomen. The doctor conjectured some small vessel had given way, but where, it was impossible to say. Ordinary remedies for collapse were ordered, and at midnight she rallied; pain much less; respiration 36, "sighing;" temperature 96.6° in mouth; radial was now felt at 120. Next day about noon she became unconscious and died soon after.

The *post mortem* showed much adipose tissue on abdomen; lungs and heart healthy. The abdomen was found to be full of thin pale blood; organs healthy, but very pale; from the right side a quart of thick black clots were removed; ovaries small, cystic, and atrophied; left Fallopian tube small. In the right one, one-quarter inch from uterus, an opening of the size of a horse-bean was seen, from which a little fibrinous material was oozing; the tube was enlarged throughout its entire length to the size of a pipe-stem, but where the opening existed it was as large as a No. 10 catheter. Uterus stained and congested near tube, and uterine mucous membrane thickened; the opening was in upper aspect of tube. The absence of peritonitis was thought remarkable, but it was probably due to exhaustion from the hemorrhage. The length of time the patient lived showed the bleeding was from a small vessel. The most plausible theory of the rupture seems to be that the patient caught cold at her period in December; that inflammation of the tube followed, possibly ending in abscess, and that the exertion brought about the fatal result.

CASE XVII.—Mr. Marsh, who made the autopsy, said before commencing the operation, that the last private examination he had made was on the body of a young unmarried lady who had caught cold at her period, and died from rupture of the Fallopian tube; and here also there was no peritonitis. He had never seen a similar case out of many thousand *post mortems*.

CASE XVIII.—A case by Dr. Godson, presented before the Obstetrical Society, appears in the *London Med. Times and Gaz.*, vol i., 1880, p. 193. The patient, æt. 30, was married two months; menstruation had been regular; the period commenced four days before her death at its proper time. During this day whilst walking she suffered acute pain in the left iliac region, nearly fainting. This passed off, but recurred four days after while menstruating. Collapse and the general signs of internal hemorrhage followed, and she died in twelve hours.

Autopsy showed abdominal cavity to be full of fluid blood with large clots in

the pelvic portion. The left Fallopian tube was found distended in one part to the size of a small walnut, on the anterior aspect of which was a small irregular rent, which led into a cavity in the centre of what appeared to be organized blood clots. No evidence of an ovum could be discovered. The right ovary showed a well-marked corpus luteum. In the discussion that arose there was a difference of opinion as to whether or not tubal pregnancy existed. Dr. Godson could trace no signs, but he failed to account for the distension of the tube, both ends of which were patent.

CASE XIX.—In *New York Med. Journ.*, 1880, p. 522, is reported the case of a French woman, 49 years old, who had several children, complained of obstipation of fourteen days' duration. The *autopsy* showed signs of general peritonitis, and at the bottom of peritoneal cavity were found twelves ounces of pus. The right tube was dilated by a collection of pus, a rent in the sac showing the point where it had discharged. The left tube was also inflamed and dilated with exudation, but had not ruptured.

In the *St. Thomas Hospital Museum Catalogue*, London, vol. iii. p. 227, are found several specimens chiefly of cystic dilatation or degeneration, with occlusion of the tube.

The *post mortem* in the case of Miss Neilson, the actress, by Dr. Brouardel (*Med. Record*, vol. xviii., 1880, p. 363), disclosed rupture of a varicose vein in the left Fallopian tube, supposed to have occurred in her writhing. Two quarts and a half of blood were found in the peritoneal cavity, and the ruptured vein presented an orifice of from four to five millimetres in diameter.

According to Dr. W. E. Johnston, of Paris, for the last five years she had been under his treatment. She suffered principally from gastralgia, incident to dyspepsia, a form fantastic in its coming and going, and in her case dependent on moral causes as well as on errors of diet. Being out of the city, he did not attend her in the fatal attack, but he believed it might have been relieved then, as it often had been before, by a free use of morphine. Twelve hours from the commencement of her attack, during a most violent recurrence of the pain, she suddenly ceased to complain, went into a state of syncope, and died.

I have nothing to add in my case further than that I believe it to have been one of arrest of impregnated ovum in the tube. The enlarged uterus, the corpus luteum, and overdue menses, would seem to confirm this view. It may be admitted, also, that the bleeding had been going on slowly from the first moment of the attack, and suddenly increased the day of death. I am not convinced that a violent effort will rupture an organ in repose like a healthy Fallopian tube. If this were so it should occur oftener, for instance, during parturition, when the pressure and exertion combined are greater, perhaps, than in any other contingency. Another feature which must not be overlooked is, that all the ruptures occurred in married women, except the two cases who had never menstruated, and the one mentioned by Mr. Marsh. I cannot find a record of one attending the menstrual flow of a virgin. The interesting question, therefore, arises, can this accident, as claimed in one of the cases cited, and by Churchill and Rokitanski, take place in a non-pregnant female without disease, atresia, or occlusion?

ARTICLE VII.

THE GEOGRAPHICAL AND CLIMATIC RELATIONS OF PNEUMONIA; A STATISTICAL STUDY. By E. SANDERS, M.D., late House Physician, Bellevue Hospital, New York; Attending Physician to Mt. Sinai Hospital Dispensary, Department of Internal Diseases.

ALMOST with the very birth of medicine attempts were made to trace the relations of climate to disease. From the nucleus created by the father of medicine, the number of works devoted to this subject has, with the increase of knowledge in other branches of medical science, gone on steadily increasing, till, at the present day, our shelves are fairly littered with them. Hippocrates paid particular attention to climatic influences, tracing out clearly, even with the imperfect appliances and lack of previous observations at his command, the characteristics assumed by diseases under the varying influences of heat and cold, wet and dry, and the directions of the winds, establishing from these relations the doctrine of medical constitutions, the deductions of which have hardly been surpassed even at the present day. Geographic distribution, however, he did not consider. Save in a few instances, climatic relations alone are those which seem to have attracted the attention of writers of the present day, and but little advance has been made in our knowledge of the geographic limits of disease. Yet as Charcot has said (*Clin. Lects. on the Diseases of Old Age*, N. Y., 1881, trans. by Leigh H. Hunt, p. 85), "Medical geography is, equally with historical pathology, one of the most fruitful means of investigation in etiological research. It enables us to become acquainted with the different regions of the globe in which certain diseases prevail, and thus allows upon the grandest scale a study of the cosmical, tellurial, and even anthropological conditions that may favour or hinder their development." In another place he further adds, "A medical geography has yet to be written. Under the influence of certain preconceived ideas, a deplorable confusion has arisen among all the diseases which trace their origin to cold; and it is easily understood how difficult becomes the task of criticism when observations made in remote regions are to be examined and tested," and to no disease may these remarks be more appropriately applied than to pneumonia, the disease which above all others has been supposed to be dependent upon cold as its great etiological factor. It has been truly said by Mühry that diseases have not been thrown at haphazard over the face of the earth. Each country has its own distinctive diseases, as well as its own fauna and flora. Diseases, like plants and animals, flourish only within certain geographical limits, or have a definite distribution where certain influences prevail, beyond which they cannot go without the risk of disappearing. Of all the climatic relations of disease, the most important is the latitudinal. Yet with

the exception only of a few of the epidemic and paludal maladies, no attention, or at least but little, has been paid to the geographic distribution of the various wide-spread or endemic diseases from which man suffers; and with relation to pneumonia, as regards this question, the disease with which we are more particularly concerned, there is but one article, as far as I am aware, devoted to the discussion of this subject, this being a statistical paper by Von Ziemssen, published many years ago, wherein it is claimed, on insufficient data I believe, that it cannot be maintained that pneumonia appears absolutely more wide-spread and more frequent in one climate than in another (*Canstatt's Jahrb.*, bd. ii., 1857, S. 119). It has been estimated (Juergensen, Korányi) that primary pneumonia comprises 3 per cent. of all sickness in France, Germany, and England, and 6 per cent. of all internal diseases, while it also causes 6.6 per cent. of all deaths, or 12.7 per cent. of the mortality from internal maladies. From statistics collected by me, I obtain for 68 cities of Europe, having an average death-rate of 26.7 per 1000 of population, a mortality from pneumonia of 6 per cent. of all deaths, or a death-rate of 1.6 per 1000 living; while for 106 American towns and cities, the average death-rate for these being 20.4 per 1000 inhabitants, the proportions are 6.1 per cent. of all deaths, or 1.2 in every 1000 population die of this disease. Besides these cities I have returns for 16 others, 4 being situated in Central America, 4 in South America, 2 in Asia, 2 in Africa, 2 in Australia, and one each in Cuba and the Sandwich Islands; these cities, showing an average death-rate of 47.4, have a mortality from pneumonia of 1.7 per 1000 living, while it causes 4.6 of all deaths. As an average of these 190 towns and cities the world over, I obtain for the disease the ratios 1.4 for each 1000 of population, or 5.9 per cent. of all deaths.

From the eighth and ninth census reports of the United States, the results obtained for the country as a whole, are a pneumonia rate of 0.98 per 1000 inhabitants, or 7.8 per cent. of all deaths are found to be due to pneumonia. The following table will show these death-rates for the various countries of the globe:—

	Pneumonia.			
	Per 1000 inhabitants.	Per cent. of deaths.	Death-rate.	No. of cities.
North America	1.21	6.1	20.4	106
Central America	1.82	2.6	84.8	4
South America	1.61	5.8	30.9	4
Cuba	1.40	2.8	43.0	1
Sandwich Islands	0.61	2.0	37.4	1
Europe	1.57	6.0	26.7	68
Asia (Hindostan)	1.43	6.8	48.3	2
Africa	3.62	9.1	39.4	2
Australia	0.72	3.6	21.2	2
World over	1.38	5.9	24.8	190

In a paper read before the New York Academy of Medicine, and published in the *Archives of Medicine*, June and August, 1881, I called

particular attention to the fact that pneumonia had a distinct, well-marked, and characteristic distribution over the face of the earth, but, at the same time, admitted that the statistics on which this conclusion was then based were too imperfect and scanty for anything like positive deductions. I quote from this article: "Pneumonia, all other things being equal, increases uniformly in frequency the nearer we approach the tropics. That is to say, and the fact is a surprising one, and one directly opposed to its presumed dependence on cold, the disease is more commonly met with, is more frequent in warm than in cold climates, and in hot than in warm climates, showing a gradually increasing ratio from the poles to the equator. Such is undoubtedly true of the United States; and as far as shown by the statistics I have been able to gather, which, it must be confessed, are not as numerous as could be wished, also of foreign countries." Since then I have succeeded in collecting a large series of statistics bearing upon this matter, from which I have been enabled to deduce the geographical and climatic relations of the disease. I shall first consider the various perturbating circumstances which may affect the distribution of the disease, taking up in detail the effects of altitude, rain-fall, temperature, actual population, and density of population, death-rate, longitude, etc. etc.; finally, discussing its most important relation, the latitudinal.

Obviously, it would be unsatisfactory and far from convincing to base any positive statements upon statistics obtained from hospitals, naval, military, or the like sources, as Ziemssen and Hirsch have done, since, in such cases, we are dealing only with a particular class, and not with the generality of humanity that goes to make up the population of a State. Besides, in the instances of soldiers and sailors, the circumstances under which they may be placed at different times may vary greatly, whether in garrison or in the open, at sea or on land, either in time of war or peace. No positive or unimpeachable conclusions can, therefore, be deduced as regards the geographical distribution of pneumonia from such data, although they may, perhaps, lend a certain amount of secondary evidence in this direction. The most absolute data can only be obtained from the returns of countries and cities, embracing, as they do, the entire population, subjected to relatively similar circumstances of environment. Hence, in the discussion of the various questions that may arise, all deductions will be drawn from such returns for cities and countries only, statistics of special classes being discarded as not of general application.

1. *Elevation or Altitude above the Sea-level.*—Toner, in the introduction to his *Dictionary of Elevations and Climatic Register of the United States*, New York, 1874, page v., writes, "We suppose it will be admitted without question, that in general the elevated regions of the world—the hills, the forests, and the high plateaus, and the mountains in the temperate and torrid zones—are more salubrious than the low alluvial and tide-water plains, and contribute more to the strength, vigour, hardihood,

and, we might add, happiness of our race," while, later on, page xxiv., he further says, "we think it exceedingly probable that health and diseases of various types are as much affected by climatic influences, induced by altitude, as by latitude and longitude." Such being then the importance of this element on climate and disease, a careful study of its relations to pneumonia must obviously be of great interest.

It has been claimed, and the most prominent and emphatic among those who have made this claim is Lombard, that pneumonia increases in a direct ratio the higher we ascend above the sea-level. It is a well-recognized fact that pestilential diseases prevail, are more common, below, at, or near the level of the sea. The most prominent of this class is yellow fever, which never prevails on the mountain tops or on elevated plains, but always in places situated in low-lying lands or along the sea-board. Typhoid, dysentery, cholera, and the paludal fevers are also instances where a similar rule prevails. It will be observed that all of these are members of the miasmatic or miasmatic-contagious class of diseases, a class to which it is believed by many that pneumonia belongs. As already stated, Lombard has claimed to have proven that the disease is most common in the high uplands or near the mountain's top, stating that "in Switzerland and Germany we have noticed the gradual increase of pneumonia with the altitude as the uniform result of the observations of a great number of practitioners dwelling in the high regions of these two countries, these having enabled me to show the frequency of pneumonia as one of the characteristics of the climate of mountains" (*Traité de Climatologie Médicale*, tome iv., Paris, 1880, p. 392). Let us see how statistics bear out this assertion of Lombard's. Geneva, a city placed at 1280 feet above the sea-level, shows a death-rate from pneumonia of 1.1 per 1000 inhabitants; while Basle, situated fully 400 feet lower, presents a rate of 1.9 per 1000 living. Again, we have Munich, of which it has justly been said that but few cities of the world have so small a number of deaths from the disease, its rate being 0.54 per 1000 of population, yet it is located at an altitude of 1690 feet. Halle, with an elevation of but 364 feet, has a death-rate from this malady of 2.3 to every 1000 of its inhabitants; with Wurzburg, at 561 feet, having but 1.5; while Trieste, at 285 feet, shows the high rate of 2.3; Genoa, at 177 feet, presents 3.3; and Marseilles, at 150 feet, 3.7. Take a few examples from our own country. Denver, lying at an elevation of 5269 feet, has a death-rate of but 0.34; Boulder, at 5250 feet, a rate of 0.71; Winona, at 1500 feet, 0.81; Burlington, Iowa, at 940 feet, 0.38; while Augusta, Ga., at 185 feet, shows 3.0; Washington, D. C., at 45 feet, 2.19; New York, at 35 feet, 2.19; Jersey City, at 30 feet, 1.79; Savannah, at 20 feet, 3.52; Norfolk, at 15 feet, 2.21; and Stamford, Conn., at 10 feet, 1.86 per 1000 living. Such are but a few of many instances that might be presented. The relation of altitude to pneumonia, certainly in our own country, is positive, showing a gradually decreasing

ratio as we ascend, a conclusion, therefore, diametrically opposed to that of Lombard's. My statistics embrace those of the various States obtained from the eighth and ninth census reports, as also the returns for ninety-eight of our American towns and cities. The altitudes were obtained from Toner's work already quoted, and in each instance represent the mean elevation of the place or State above the sea-level.

For the States the following *résumé* is presented:—

No. of States.	Elevation.	Per 1000 inhabitants.	No. of States.	Elevation.	Per 1000 inhabitants.	No. of States.	Elevation.	Per 1000 inhabitants.
5	50 to 200 ft.	1.11	7	50 to 300 ft.	1.12	15	50 to 500 ft.	1.21
8	200 " 400 "	1.25	10	300 " 600 "	1.23	16	500 " 1000 "	0.85
4	400 " 600 "	1.13	13	600 " 900 "	0.85	7	1000 " 7000 "	0.78
8	600 " 800 "	0.83	4	900 " 2000 "	0.86			
6	800 " 1000 "	0.83	4	2000 " 7000 "	0.66			
4	1000 " 2500 "	0.79						
3	2500 " 7000 "	0.77						

Let us now review the returns for our cities.

No. of cities.	Elevation.	Per 1000 inhabitants.	No. of cities.	Elevation.	Per 1000 inhabitants.	No. of cities.	Elevation.	Per 1000 inhabitants
40	0 to 200 ft.	1.30	56	0 to 300 ft.	1.32	68	0 to 500 ft.	1.30
13	200 " 400 "	1.44	22	300 " 600 "	1.16	26	500 " 1000 "	0.98
16	400 " 600 "	1.06	14	600 " 900 "	0.84	4	Above 1000 "	0.73
12	600 " 800 "	0.85	3	900 " 1200 "	0.86			
4	800 " 1000 "	0.97	3	Above 1200 "	0.62			
4	Above 1000 "	0.73						

Such are the facts drawn from the statistics of North America, and they certainly show in a most striking and decided manner the fact that with increase in elevation there is a coincident and gradual decrease in the mortality from pneumonia, all other things being equal. In studying this question, as related to the cities of Europe, I am met by the difficulty in obtaining the mean elevations of the various places, being enabled to do so only in thirty-nine instances. Still, as far as they go, they certainly seem to bear out the above conclusion, at least they cannot be claimed to contradict it.

No. of cities.	Elevation.	Per 1000 inhabitants.
28	0 to 500 feet.	1.83
9	500 " 1000 "	2.05
2	above 1000 "	0.82

Fonssagrives (*Hygiène et assainissement des Villes*, Paris, 1874, p. 75) has divided cities on the basis of the influence of altitude upon the climate of the locality, into five classes: 1st, those situated at an elevation of from 6560 to 14,150 feet; 2d, those at from 3280 to 6560 feet; 3d, those at from 985 to 3280 feet; 4th, those at from 165 to 985 feet; and, 5th, those from 15 feet below to 165 feet above the sea-level. Adopting this classification and arranging according to this principle cities the world over, I get the following results from the study of 146 such places:—

No. of cities.	Elevation.	Per 1000 inhabitants.
67	5th class.	1.38
71	4th "	1.47
5	3d "	1.08
2	2d "	0.53
1	1st "	0.61

Again, showing this steady decrease with increase in altitude. Now what are the opinions of authors upon this question of the relation of altitude to the pneumonia rate? Lombard, as already stated, believes that it steadily increases with increase in elevation, being most commonly met with on high uplands and the mountains, least in the low-lying valleys. He instances the so-called *Alpen-stich*. Unfortunately for his side of the question, this is not pneumonia, but rather a complex of diseases, being most frequently a malignant form of pleurisy. Besides, the very countries that he indicates, as well as the other States of Europe, are characterized not by the greater prevalence of the disease at high altitudes, but rather the contrary, as shown by the facts already quoted. Geneva, Wurzburg, Munich, Prague, Frankfurt, all present low death-rates from pneumonia, though situated at altitudes ranging from 427 to 1690 feet above the sea-level; whereas, Halle, Trieste, Paris, Bologna, Marseilles, all have high death-rates from the disease, though placed at points ranging at but from 200 to 375 feet above the surface of the sea. Hirsch apparently is of the opinion that the malady is common at high altitudes, but, as Juergensen justly claims, the data on which he bases this conclusion are not trustworthy. This latter author expresses himself as in doubt, though apparently leaning to an opinion opposed to that of the former. He, however, considers the question as still unsettled. Ziemssen, on the contrary, deduces from his statistics that the disease is most common in the plains.

2. *Rain-fall.*—It has been shown by Sturges that any considerable amount of wet has no tendency to heighten the pneumonia rate, the very lowest numbers of this disease, out of ten years, being found to follow weeks of excessive rain (*On Pneumonia; its Natural History and Relations; a Clinical Study*, London, 1876, p. 141). From such facts it would seem that pneumonia bore some relation to the rain-fall, still I am unable to trace such a connection clearly enough to convince myself of its existence. Although it is true, generally speaking, that the annual amount of precipitation increases the nearer we approach the tropics, still this increase is far from absolute or uniform, as a glance at Blodgett's Climatological Map of the United States, or the Precipitation Charts of the Signal Service Bureau, or the Map, by Prof. E. Loomis, of the mean annual rain-fall of the world (*American Journal of Science*, Jan. 1882), will show. A somewhat similar irregularity is found as regards the relations of pneumonia to the mean annual rain-fall, as shown by the following tables representing the results obtained from a study of 106 North American cities, the facts relating to the mean annual precipitation being ob-

tained from such standard sources as Blodgett's *Climatology of the United States*, Philadelphia, 1857; Annual Reports of the Chief Signal Officer of the United States; and Gray's *National Atlas*, Philadelphia, 1881, article on Climatology, by Lorin Blodgett, p. 215, *et seq.*, and Loomis's article in the *American Journal of Science*, already mentioned.

No. of cities.	Amount of rain.	Per 1000 inhabitants.	No. of cities.	Amount of rain.	Per 1000 inhabitants.
4	10 to 20 inches.	1.16	8	10 to 30 inches.	1.32
4	20 " 30 "	1.48	91	30 " 50 "	1.14
27	30 " 40 "	0.98	7	50 " 70 "	1.98
64	40 " 50 "	1.21			
5	50 " 60 "	2.42			
2	60 " 70 "	0.92			

The facts which I have collected relating to European cities are, unfortunately, as in the case of altitude, too few for anything like reliable deductions, though, as far as they go, they bear out the conclusion already arrived at.

No. of cities.	Amount of rain.	Per 1000 inhabitants.	No. of cities.	Amount of rain.	Per 1000 inhabitants.
4	15 to 20 inches.	2.62	10	15 to 25 inches.	2.26
17	20 " 30 "	1.44	17	25 " 35 "	1.24
10	30 " 40 "	1.29	6	35 " 45 "	1.33
2	40 " 50 "	1.88			

3. *Death-rate.*—It may be taken as a general conclusion that the nearer we approach the tropics the higher the death-rate in cities. This is undoubtedly true of both Europe and America, as might easily be shown here, but a discussion of such a question would carry us too far, and, besides, is foreign to our subject. The fact being granted, with increase in death-rate, it is found that there is a similar relative increase in the pneumonia rate, as clearly shown by the following, deduced from the study of 106 American, 68 European, and 8 other towns and cities scattered the world over.

Death rate per 1000 living.	Pneumonia-rate per 1000 living.				Both.		The world over.	
	America.	No. of cities.	Europe.	No. of cities.	Per 1000 inhabit'nts	No. of cities.	Per 1000 inhab's.	No. of cities.
5 to 10	0.38	1			0.38	1	0.38	1
10 " 15	0.81	17			0.81	17	0 81	17
15 " 20	1.09	34	0.80	2	1.07	36	1.07	36
20 " 25	1.20	33	1.34	25	1.26	58	1.25	61
25 " 30	1.83	15	1.43	29	1.57	44	1.57	44
30 " 35	1.34	5	2.59	7	2.07	12	2.20	13
35 " 40			2.35	5	2.35	5	2.12	7
40 " 45	3.52	1			3.52	1	2.28	3

The fact that the American cities show a lower death-rate than those of Europe, is explained in part on the ground, that of the latter my list embraces, save with a few exceptions, large cities only; whereas the former includes a great many of our smaller towns; it being a well-known

and recognized circumstance that the death-rate of a city bears a direct relation to the number and density of its population.

4. *Population—Density of Population.*—As might be expected, pneumonia occurs more frequently in large than in small cities, while cities taken as a class show a larger relative death-rate from the disease than the country, that is city dwellers suffer from the disease to a greater extent than those belonging to the rural population. This is not a new fact, for both Ziemssen and Hirsch have shown such to be the case many years ago. Still, to render certainty doubly sure, a simple statement can hardly be considered sufficient, and the following table is, therefore, presented, giving a comparison between various States and cities of States:—

	Per 1000 inhab's.				Per 1000 inhab's.		
States.	State.	Cities.	No. of cities.	States.	State.	Cities.	No. of cities.
Ala.	1.47	1.44	2	Miss.	1.68	0.84	1
Ark.	2.98	3.48	1	Mo.	1.41	1.28	1
Cal.	0.65	1.15	4	Neb.	0.93	1.15	1
Col.	0.48	0.53	2	Nev.	1.18	2.61	1
D. of C.	0.98	2.19	1	N. H.	0.96	1.13	1
Conn.	0.72	0.95	11	N. J.	0.59	1.28	3
Del.	0.68	0.84	1	N. Y.	0.87	1.13	13
Fla.	1.39	0.97	1	N. C.	0.80	1.08	1
Ga.	1.17	3.26	2	Ohio,	0.65	0.94	5
Ill.	0.96	0.82	4	Penna.	0.58	0.99	6
Ind.	0.88	1.07	4	R. I.	0.78	1.15	2
Iowa,	0.61	0.38	1	S. C.	1.26	1.26	1
Ky.	0.95	1.24	2	Tenn.	1.04	1.60	3
La.	1.75	1.55	1	Texas,	1.58	1.53	3
Md.	0.70	1.33	1	Vt.	0.59	1.06	1
Mass.	0.98	1.33	12	Va. }	0.94	1.34	5
Mich.	0.67	0.83	2	W. Va. }			
Minn.	0.39	0.87	2	Wis.	0.50	0.82	1

Thus in 27 instances the pneumonia-rate is less throughout the State than in its cities, whereas the contrary held in but 9 instances. The same can be shown of foreign countries. Turning to Europe, we find a similar condition of affairs prevailing.

	Per 1000 inhabitants.		No. of cities.
	Country.	Cities.	
Belgium	0.85	1.74	2
Germany	1.34	1.54	19
England and Wales	1.03	1.22	13
Ireland	0.31	0.54	4
Scotland	0.73	1.12	8
Norway and Sweden	1.60	2.00	2
Switzerland	1.50	1.71	3
Italy	1.85	2.95	3

Showing in every instance a pneumonia death-rate in cities exceeding the average for the entire country; clearly indicating a greater predilection of city dwellers for the disease.

Again, statistics show that the disease is more common in large than in small cities; a fact that would almost necessarily follow from the preceding. For North America a *résumé* of 106 towns and cities, for Europe 70, and for the world over a total of 185, shows—

	North America.	No. of cities.	Europe.	No. of cities.
Over 500,000 population . .	1.55	4	1.99	7
From 200,000 to 500,000 population	1.44	6	1.97	14
" 100,000 " 200,000 "	1.29	10	1.58	27
" 50,000 " 100,000 "	0.98	13	1.35	16
" 10,000 " 50,000 "	1.21	67	1.19	6
Less than 10,000 "	1.10	6		

	N. America and Europe.	No. of cities.	World over.	No. of cities.
Over 1,000,000 population . .	1.66	4	1.66	4
From 500,000 to 1,000,000 population	1.93	7	1.86	8
" 200,000 " 500,000 "	1.81	20	1.75	22
" 100,000 " 200,000 "	1.49	37	1.47	39
" 50,000 " 100,000 "	1.18	29	1.28	31
" 10,000 " 50,000 "	1.21	73	1.21	75
Less than 10,000 "	1.10	6	1.10	6

That crowd-poison bears a more or less direct etiological relation to pneumonia has more than once been referred to by authors. According to returns from various sources, the disease would seem to be considerably more frequent in the poorer quarters of towns than among the wealthy. In the reports of a number of epidemics of pneumonia, overcrowding plays a very important part, occurring as they did in cloisters, prisons, barracks, on board ship, in tenements, and the like. That the disease is most frequent in the poorer quarters of Paris has been positively proven by Vacher. Thus he shows that the proportion of deaths by pneumonia is about twice as large in the poor arrondissements as in those of the rich, four of this latter class exhibiting a rate of 0.89 per 1000 inhabitants, while four poor districts presented a rate of 1.74 per 1000 of its dwellers (*Etude Méd. et Statistique sur la Mortalité, etc., en* 1865, Paris, 1866, p. 139). That the same is true of our own cities might easily be demonstrated; suffice here the simple statement that statistics prove such to be the case. It may be considered the rule that in cities the districts in which the poor reside show greater density of population than the quarters of the better classes. Hence, if this frequency of the disease among the poor be dependent upon overcrowding or crowd-poison, the death-rate from this malady should vary with the density of population. That such is the case is proven by such figures as the following:—

Inhabitants per square mile.	North America	No. of cities	Europe.	No. of cities	Both.	No. of cities	World over.	No. of cities
60,000 to 70,000 persons			1.76	2	1.76	2	1.76	2
50,000 " 60,000 "	2.19	1	1.88	2	1.98	3	2.07	5
40,000 " 50,000 "			1.73	3	1.73	3	1.73	3
30,000 " 40,000 "	0.85	1	1.54	3	1.37	4	1.37	4
20,000 " 30,000 "	1.55	3	1.18	6	1.30	9	1.30	9
10,000 " 20,000 "	1.37	8	1.18	6	1.29	14	1.29	14
5,000 " 10,000 "	1.16	17	1.95	2	1.25	19	1.25	19
1,000 " 5000 "	1.17	12	2.06	1	1.24	13	1.24	13
Less than 1000 "	1.43	4			1.43	4	1.43	4

Still further evidence is found in the connection between the pneumonia-rate and the number of dwellers per house of each city. I have succeeded in establishing this relation for 41 cities of the United States, with a result bearing out in a most unmistakable manner this assumed dependence upon crowd-poison.

Inhabitants per house.	Per 1000 inhabitants.	No. of cities.
14 to 15	2.19	1
8 " 9	1.64	4
7 " 8	1.16	6
6 " 7	1.31	17
5 " 6	1.10	13

5. *Temperature.*—To me the etiological factor cold has appeared very much like the pathological term "functional," merely an expression of our ignorance. As our knowledge of morbid anatomy increases, the number of so-called functional diseases steadily grows less. And so it is with maladies assumed to be due to "catching cold;" a class which the older physicians were so fond of grouping under the generic name of rheumatic affections, one formerly embracing a large number of diseases. Were it true that pneumonia is directly related to cold, it would necessarily follow that, with a low mean annual temperature, the pneumonia-rate must undoubtedly be high. Now to settle this question with as much certainty as possible, it is deemed best to study it from all points, being well aware that, if the geographical distribution bear any definite relation to the temperature, by such a study alone can this fact be made apparent. It will hardly be disputed that, generally speaking, the nearer the equator, the higher the mean annual temperature of a place—the nearer the poles, the lower the temperature. Rochard (*Nouveau Dictionnaire de Méd. et de Chirurg. Pratiques*, tome viii., Paris, 1868, art. Climat.) has divided climates as related to temperature into five classes: 1st, the torrid, extending from the thermal equator to the isothermal line of 77° F.; 2d, the warm, extending from the line of 77° F. to that of 59° F.; 3d, the temperate, comprised between that of 59° F. and that of 41° F.; 4th, the cold, lying between the isothermals of 41° F. and 23° F.; and, 5th, the polar, between 23° F. and 5° F. For the first and fifth of these classes, statistics of pneumonia are almost entirely wanting, and, when obtained, so very imperfect as to be absolutely useless for our purpose. Those that I have arranged, according to this classification show for warm climates an average of 1.70 deaths from pneumonia for each 1000 of population, based on the returns of 157 cities; while cities located in the temperate climates present an average of 1.31 per 1000 inhabitants, deduced from the returns of 15 cities.

Contrary to what has been maintained by many, a high mean annual temperature means a high death-rate from pneumonia. The proof of this statement lies in the various tables now presented.

Thus, for North America and Europe, a tabulation of 172 towns and cities shows such to be a fact in a most striking manner.

Mean. temp. (F.)	North America.	No. of cities.	Europe.	No. of cities.
65° to 70°	1.70	11		
60° " 65°	1.72	4		
55° " 60°	1.41	9	2.36	5
50° " 55°	1.21	27	1.54	17
45° " 50°	1.00	50	1.47	44
40° " 45°	1.01	3	1.99	2

Again, according to Boudin, it has been shown that in the Northern Hemisphere, in the system of Eastern America, that is, along the Atlantic seaboard, the mean annual temperature increases according to a certain definite ratio. Thus, for each degree of latitude from the coast of Labrador to Boston, the increment of increase is 1.58° F.; from Boston to Charleston, S. C., 1.71° F.; from Charleston to the Tropic of Cancer, 1.19° F. In Central Europe, between the parallels 71° and 38°, the temperature rises uniformly 0.90° F. for each degree of latitude. Constructing a table on this basis, to show that there can here be no mere juggling of figures, we obtain for North America:—

Latitude (N.)	Mean temp. (F.)	Pneu. per 1000 inhabitants.	Increment of increase in temperature.	Pneu. increase or decrease.		Increment of increase or decrease of pneu.
				Per 3° lat.	Per 1° lat.	
29°–32°	70° to 66.4°	1.275	1.58°	1.061(–)	0.354(–)	0.354(–)
32 –35	66.4 " 61.7	2.336		1.014	0.338	
35 –38	61.7 " 56.6	1.332	1.71	0.097	0.032	0.142
38 –41	56.6 " 51.4	1.224		0.165	0.055	
41 –44	51.4 " 46.5	1.059		0.164	0.055	
44 –46	46.5 " 43.4	0.885	1.19			0.055

Or arranging according to a slightly different method we get—

Latitude (N.).	Mean temp. (F).	Pneumonia per 1000 inhabitants.	Increase or decrease in pneumonia.	
			Per 5° of lat.	Per 1° of lat.
29°–30°	70° to 68.8°	1.267	0.647 (—)	0.129 (—)
30 –35	68.8 " 61.7	1.914	0.626	0.125
35 –40	61.7 " 53.1	1.288	0.216	0.043
40 –45	53.1 " 44.9	1.072	0.224	0.045
45 –46	44.9 " 43.4	0.847		

While for Europe these relations are:—

Latitude (N.)	Mean temp. (F.).	Pneumonia per 1000 inhabitants.	Increase or decrease in pneumonia.	
			Per 5° of lat.	Per 1° of lat.
43°–46°	58° to 56.2°	2.917	1.062	0.354
46 –49	56.2 " 53.5	1.855	0.335	0.112
49 –52	53.5 " 50.8	1.520	0.342	0.114
52 –55	50.8 " 48.1	1.178	0.012	0.004
55 –58	48.1 " 45.4	1.166	0.825 (—)	0.275 (—)
58 –60	45.4 " 42.7	1.991		

Or again—

Latitude (N.).	Mean temp. (F.).	Pneumonia per 1000 inhabitants.	Increase or decrease in pneumonia. Per 5° of lat.	Per 1° of lat.
43°-45°	58° to 53.5°	3.515	1.585	0.317
45 -50	53.5 " 49	1.930	0.634	0.127
50 -55	49 " 44.5	1.296	0.020 (—)	0.004 (—)
55 -60	44.5 " 42.7	1.316		

Showing an almost steady increase in the pneumonia death-rate with a higher rate of mean annual temperature. It will be observed, however, that in the case of both North America and Europe there is a marked exception to this rule, in the former for the highest temperature, 68.8° to 70°, showing a decrease of 0.647 per 1000 of population in the pneumonia death-rate, while in the latter this is offset by a depression of 0.825 for low temperature, 45.4° to 42.7°. Thus, following Boudin's data, in whatever way we examine the relation of mean annual temperature to the pneumonia-rate, we find the same rule holding good; with increase in the former there is an almost uniform increase in the latter.

Turning now to the relation of the prevalence of the disease in various countries to this question. I have elsewhere shown (*Arch. of Med.*, June, 1881) that for the United States, the disease is more frequent in our Southern than in our Northern States, the former having a much higher annual temperature than the latter; and so clearly is this shown by the figures there presented, obtained from the eighth and ninth census reports, and so important do I deem them in the discussion of this point, that I again present them here in the form of a *résumé*, so modified, however, as to show at a glance their thermometrical relations to the malady.

No. of States.	Mean temperature (F.).	Pneumonia per 1000 inhabitants.
1	36.2°	0.39
4	40.8° to 44.6°	0.71
10	45.9 " 49.6	0.80
8	51. " 54.6	0.86
6	55.3 " 58.6	0.96
6	60. " 64.	1.46
3	66.4 " 69.6	1.41

Again, showing this steady increase before indicated, with, at the same time, the slight decrease for very high temperatures, a significant coincidence. For Europe the following is the result:—

No. of countries, etc.	Mean temperature (F.).	Pneumonia per 1000 inhabitants.
1	35.5°	0.79
7	42.° to 49.5°	1.06
3	50. " 58.	1.22

On studying this question after another method, that is by tabulating according to the mean annual temperatures and average pneumonia-rates of the cities of the various countries of Europe for which I have returns, the result as reached may be shown as follows:—

Countries.	Average mean temp. (F.) of cities.	Pneu. per 1000 inhabitants.	No. of cities.
Norway and Sweden	42.2°	1.99	2
Denmark	45.7	1.57	1
Prussia	48.2	1.57	14
England and Wales	48.3	1.22	13
German Empire	48.5	1.54	19
Scotland	48.8	1.12	8
Switzerland	48.8	1.71	3
Bavaria	49.3	1.02	2
Netherlands	49.8	1.90	2
Belgium	50.4	1.74	2
Austro-Hungary	51.1	2.42	4
Ireland	52.0	0.54	4
France	54.6	1.90	6
Italy	55.2	2.95	3

RÉSUMÉ

Average mean temperature.	Per 1000 inhabitants.	No. of countries.
42.2°	1.99	1
45.7° to 49.8°	1.46	8
50.4 " 54.6	1.65	4
55.2	2.95	1

6. *Relations to the Sea Coast.*—I had at first thought that those cities situated near or on the sea presented a greater prevalence of pneumonia than inland towns, but a more careful study of my statistics soon convinced me that such was not the case. As regards North America, lake ports show a smaller rate than inland towns, and these latter than sea-port towns, that is those situated on the ocean; while the relation for European cities differs somewhat from the foregoing, those located along the shores of inland seas presenting the largest mortality from the disease, next in order coming inland cities, ocean ports, properly so-called, exhibiting the lowest mortality. Thus:—

	Europe.	No. of cities.	North America.	No. of cities.
Lake or inland sea-ports	2.80	5	0.86	10
Ocean ports	1.07	14	1.36	26
Both	1.52	19	1.22	36
Inland towns	1.59	49	1.21	70

In the case of Europe, the cities situated along the shores of inland seas are, principally, those along the Mediterranean, thus accounting for the high rate of the pneumonia mortality; for it is a well-pronounced fact that cities placed on, or near, this sea, show a remarkable prevalence of the disease: Turin, Trieste, Bologna, Genoa, and Marseilles, all presenting an unusually high death-rate from this malady, ranging between 2.3 per 1000 living for Turin and 3.7 for Marseilles; while Algiers, placed on the southern shore of this sea, shows the exceedingly high rate of 3.8 per 1000 inhabitants.

7. *Longitude.*—In North America, as we pass westward, we observe a gradual but steady increase in the mortality from pneumonia, while, on the contrary, the reverse is true of Europe, for here there is a steady rise from west to east; a fact which it must be conceded is rather significant,

indicating in a most marked manner a positive relation to longitude. The increase being in the instance of the former country from east to west, and for the latter from west to east, there must necessarily be some intermediate line, possibly several lines, some degree or degrees of longitude, along which the disease must be supposed to reach its maximum of frequency. For North America my statistics of cities cover about 55 degrees of longitude, from the 70th to 125th meridian west from Greenwich; while for Europe they cover 40 degrees, that is from about 10° west to 30° east. Of the 106 American cities, all but eight lie east of the 100th meridian, hence the data of those beyond this meridian are to be considered very imperfect, allowing of no positive deductions. Those for Europe, however, are more evenly distributed, and, therefore, permit of more definite conclusions being drawn.

North America. Longitude (W.).	Pneu. per 1000 inhab's.	No. of cities.	Europe. Longitude.	Pneu. per 1000 inhab's.	No. of cities.
70° to 75°	1.17	38	10° W. to 5° W.	0.54	4
75 " 80	1.20	20	5 W. " 0	1.11	22
80 " 85	1.05	13	0 " 5 E.	1.81	7
85 " 90	1.26	15	5 E. " 10 E.	1.97	16
90 " 95	1.40	9	10 E. " 15 E.	1.55	14
95 " 100	1.47	3	15 E. " 20 E.	2.68	4
100 " 105	0.34	1	20 E. " 25 E.		0
105 " 110	0.71	1	25 E. " 30 E.	3.74	1
110 " 115	2 30	1			
115 " 120	1.80	2			
120 " 125	1.21	3			

Thus we observe from the above, that for North America there is an almost unbroken augmentation in the pneumonia mortality as we abvance from the meridian of 70° to that of 100°. Beyond this line, as before indicated, we see that the data are too few for anything like receivable deductions. For Europe the result is the same for from 10° W. to 30° E., and even here more markedly than in the case of the former.

This fact holds true also of our various States, at least the data furnished by the 8th and 9th census reports point in a most positive manner in this direction. Without giving the statistics for the individual States, a simple *résumé* is deemed sufficient for our purpose.

States wholly or in great part between Long. (W.)	Pneu. per 1000 inhab's.	Pneu. per 1000 deaths.	No. of States.
65° and 75°	0.75	56.34	7
75 " 85	0.89	72.90	12
85 " 95	1.22	94.90	12
95 " 105	1.33	101.62	3
105 " 115	0.48	50.67	1
115 " 125	0.72	61.28	3

Again showing, we observe as in the case of the cities, this diminution in the pneumonia-rate after we have passed the 100th meridian. This may possibly be due to the paucity of our data beyond this line; yet as it occurs in both cases of cities and States, it is but fair to suppose that it indicates more than a simple coincidence.

8. *Latitude.*—Turning now to the most important element in the discussion of the geographical and climatological relations of pneumonia, latitude. It was claimed, quoting from a previous publication, in an earlier part of this article, that the nearer we approached the equator the more frequent the disease became. That this is true of countries from which reliable data have been obtained will presently be shown. Including all lands, statistics, good, bad, and indifferent, do not, however, seem to bear out this statement in its entirety; but only in so far as to prove a steady increase up to a certain parallel of latitude, for America apparently the 35° N., for Europe the rise being steady as far as my figures go, where the malady reaches its maximum, and beyond which it appears to diminish in frequency. Hence, a modification of the above conclusion would seem in order. Still, it may be maintained that nearness to the equator increases the tendency of man to suffer from this complaint, the uncertainty and lack of statistics for low latitudes being remembered. But let us see the actual facts. There is no geographical element so important in regulating the climate of a place as the latitude of that place. This goes without showing and cannot be disputed. Hence a careful discussion of its influence on pneumonia must be here entered into. Before proceeding to this let us first pass in review the opinions of authors on the question of the climatic and geographical relations of the disease.

Grisolle (*Traité Pratique de la Pneumonie*, Paris, 1841, p. 124) maintains that "pneumonia occurs in all countries of the globe, but its frequency is not the same in all. It is regarded as being a malady common in cold climates, rarer in temperate climates, and above all rarest in equatorial regions." Such is also the opinion of so great an authority as Lombard, who, writing as late as 1880 (*loc. cit.*, p. 391), claims that "the documents which I have passed in review are unanimous upon the great frequency of pneumonia in the cold regions." Reading further, we find that this claim is based upon the "documents" relating to polar America, New Britain, Labrador, this latter in particular, and Greenland. We may fairly conclude that deductions from such premises must be, to say the least, very imperfect and unsatisfactory, all facts relating to such places consisting merely in simple statements, unsupported by figures. He further adds that the foregoing is also true of the northern parts of Norway, of Sweden, of Finland, of Russia, and of Siberia; yet statistics for which, excepting, perhaps, for the first two, are wanting, or, if in existence, of so imperfect a character as to be absolutely useless. Such are his conclusions from such facts. As the result of the examination of a large number of statistics, chiefly, however, relating to soldiers and sailors, Ziemssen (*Canstatt's Jahrb.*, bd. ii., 1857, S. 130) concludes that it cannot be maintained that it (pneumonia) appears absolutely more widespread and more frequent in one climate than in another; while Hirsch (*Handbuch der historisch-geographischen Pathologie*, 2er bd., Erlangen,

1862–1864, S. 20) has reached the same conclusion from a study of another series of statistics. Pneumonia and pleuritis, he claims, as primary diseases, appear at all points of the earth's surface, and if in certain regions more frequently than in others, yet entirely different from and to a far less degree dependent upon climatic influences, than catarrh and bronchitis, which he elsewhere shows to increase steadily in frequency from the equator to the poles. Juergensen (*Ziemssen's Cyclop. of Med.*, vol. v., p. 13, Amer. Trans.) holds the same opinion as the two authors just quoted; further claiming, however, that the belief that the malady becomes more frequent as we advance from the higher latitudes to the tropics, is also not true; stating "that the statistics we already possess are amply sufficient to establish it. Its importance need hardly be discussed here"—in this summary manner dismissing the subject from further discussion. Fonssagrives (*Dict. Encyclopéd. des Sc. Méd.*, tome xviii., 1876, art. climat.) is the only authority, as far as I am aware, who holds an opinion directly opposed to those of the authors already quoted; yet, as we shall see, his conclusions are reached from a study of the very statistics from which Grisolle derived his conclusions. "The geographical domain of pneumonia," he writes, "offers a distribution, if not completely the reverse of that of hepatitis, at least opposed to it. This malady spares, doubtless, neither climate nor race, but has for certain climatological conditions (formules) a predilection which we here demonstrate. We have, in order to convince ourselves of this, but to read the complete article which Grisolle, applying the important documents furnished by J. Rochard and Le Roy de Mericourt, has written upon the geographic distribution of pneumonia. He shows us that this malady, very rare in the polar climates in spite of the inclemency of its temperature, increases in frequency from 60° north latitude, already presenting itself with a certain amount of vigour in Sweden and Denmark; increasing in Germany; becoming still more frequent in England, where it kills 19,000 to 20,000 persons a year; showing itself with greater frequency in France, where it furnishes 8.5 per cent. of the general mortality; presenting itself with an almost equal intensity in Italy and in Spain, but, leaving here, becoming somewhat rarer as we advance towards the south, constituting in the tropical countries, as I have myself shown, a kind of nosological rarity." I have quoted this author so fully because his conclusions almost exactly coincide with those I have reached. It must be here stated, that at the time that the conclusion, that pneumonia increased in frequency as we pass from high to equatorial latitudes, was arrived at by me, I was totally unaware of Fonssagrives's; hence, the conclusions reached must be considered as independent, although his preceded mine in point of time, and as lending support to each other.

The statistics on which my deductions are based will now be passed in review:—

United States.

States.	Latitude (N.).	Pneu. per 1000 inhabitants.	Pneu. per 1000 deaths.
Minnesota	43° 30′–49°	0.39	55.30
Maine	43 –47° 30′	0.62	51.22
Vermont	42 44′–45°	0.59	55.58
New Hampshire	42 42 –45 18′	0.96	62.46
Wisconsin	42 47 –47	0.50	54.55
Oregon	42 –46° 18′	0.34	55.76
Michigan	41 42′–48° 22′	0.67	69.74
Massachusetts	41 14 –43 53	0.98	59.29
Rhode Island	41 18 –42 03	0.78	58.23
Connecticut	41 –42°03′	0.72	55.96
Iowa	40 36′–43° 30	0 61	75.32
New York	40 29′–45	0.87	60.28
Nebraska	40 –43°	0.93	87.30
Pennsylvania	39 55′–42° 15′	0.58	44.84
New Jersey	38 55′–41 21	0.59	51.61
District of Columbia	38 51′	0.98	60.87
Delaware	38 28′–39° 50′	0 68	56.41
Ohio	38 21′–41 58	0.65	60.27
Maryland	37 53′–39 44	0.70	59.59
Indiana	37 46 –41 46	0.88	80.66
Colorado	37 –41°	0.48	50.67
Kansas	37 –40°	1.49	112.13
Illinois	36 59 –42° 30′	0.96	77.94
Virginia and West Va.	36 31 –40 40	0.94	75.66
Kentucky	36 30 –39 06	0.95	78.49
Missouri	36 –40° 30′	1.41	103.96
Nevada	35 –42	1.18	81.30
Tennessee	35 –36 30′	1.04	84.03
North Carolina	33 49 –36 30′	0.80	71.34
Arkansas	33 –36 30	2.98	183.42
California	32 28 –42	0.65	46.77
South Carolina	32 04 –35° 13′	1.26	102.58
Mississippi	31 52′–35	1.68	127.21
Georgia	30 20′–35	1.17	99.54
Alabama	30 15′–35	1.47	123.81
Louisiana	28 56′–36 30′	1.75	94.15
Texas	25 51′–36 30	1.58	104.43
Florida	24 30′–31	1.39	113.55

Comparing the 19 States lying wholly, or in great part, above the 39th parallel of latitude with the 19 lying below this line, we find an average pneumonia death-rate for the former of 0.69 per 1000 living, or a mortality of 6.1 per cent. for all deaths, and 1.27 per 1000 population, or 9.4 per cent. of the entire mortality for the latter. That is, pneumonia is actually about twice as frequently met with, or about one and a half times as common a cause of death, in the Southern as in the Northern States. Or, constructing a table on another basis so as to show more clearly this latitudinal distribution of the disease, we obtain the following:—

No. of States.	States wholly or in great part between the	Pneu. per 1000 inhabitants.	Pneu. per 1000 deaths.
1	25th and 30th parallels.	1.39	113.55
8	30th and 35th "	1.58	113.31
13	35th and 40th "	0.93	73.14
14	40th and 45th "	0.72	61.85
2	45th and 50th "	0.51	53.26

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Showing a marked and undoubted dependence upon latitude. Turning now to European countries. Here my statistics are few, and rather unsatisfactory; the difficulty being that, in most of these States, pneumonia, bronchitis, and pleurisy are returned under one head, thus rendering such data useless for separate consideration. However, as far as they go, the deductions are the same as those for our own country. Thus:—

States, etc.	Latitude (N.)	Countries, etc.		Cities.		No. of cities.	Death-rate.	
		Per 1000 inhab's.	Per 1000 deaths.	Per 1000 inhab's	Per 1000 deaths.		Cities.	Countries.
Italy,	36°35′–47°	1.85	126.3	2.95	97.6	3	30.2	29.5
Austro-Hungary	42 –51			2.42	68.9	4	36.1	35.4
France,	42 20–51 05′		85.0	1.90	64.3	6	28.6	24.3
Switzerland	45 48–47 49	1.50	77.8	1.71	73.0	3	24.0	24.0
German Empire,	47 20–55 50	1.34	60.0	1.54	59.0	19	26.8	27.2
Bavaria,		1.40	47.6	1.02	36.0	2	33 4	28.8
Prussia,		1.05	39.2	1.57	74.7	14	26.2	26.6
Belgium,	49 27–51 30	0.85	45.0	1.74	61.6	2	25.5	19.2
England and Wales	49 57–55 47	1 03	46.7	1.22	51.5	13	24.1	21.8
Netherlands	50 43–53 33			1.90	74.9	2	26.3	24.4
Ireland	51 26–55 23	0.31	19.3	0.54	17.7	4	28.6	16.1
Denmark	54 30–57 45			1.57	63.7	1	23.9	22.6
Scotland	54 42–58 40	0.73	38.2	1.12	47.4	8	23.5	20.5
Norway & Sweden	55 15–71 10	1.60	64.7	1.99	76.0	2	23.6	18.6
Foroe Isles	61 20–62 30	0.71	44.9					15.8
Iceland	63 23–66 33	0.79	31.8					25.5

Again showing an almost uninterrupted decrease as we pass northward from Italy to the northernmost countries of Europe; the only marked exception to this rule being the instance of Sweden and Norway.

So much for the various States and countries; let us now turn our attention to the bearing of the statistics derived from the various cities of America and Europe upon the latitudinal relations of pneumonia. A single *résumé* is here presented, since a detailed list of all the cities would occupy too much time and space, without, even, then showing in a sufficiently clear manner these relations.

United States.

Latitude (N.).	Pneu. per 1000 inhab's.	Pneu. per 1000 deaths.	No. of cities.	Latitude (N.).	Pneu. per 1000 inhab's.	Pneu. per 1000 deaths.	No. of cities.
29° to 32°	1.28	51.31	7	29° to 30°	1.27	46.32	3
32 " 35	2.34	84.36	6	30 " 35	1.91	72.64	10
35 " 38	1.32	57 80	10	35 " 40	1.29	60.41	28
38 " 41	1.22	60.91	32	40 " 45	1.07	60.54	64
41 " 44	1.06	61.11	46	45 " 46	0.85	29.16	1
44 " 46	0.89	51.36	5				

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Europe.

Latitude (N.).	Pneu. per 1000 inhab's.	Pneu. per 1000 deaths.	No. of cities.	Latitude (N.).	Pneu. per 1000 inhab's.	Pneu. per 1000 deaths.	No. of cities.
43° to 46°	2.92	93.49	7	43° to 45°	3.52	114.97	4
46 " 49	1.86	73.28	10	45 " 50	1.93	72.11	15
49 " 52	1.52	57.13	8	50 " 55	1.30	51.44	38
52 " 55	1.18	48.49	22	55 " 60	1.32	54.17	11
55 " 58	1.17	59.21	9				
58 " 60	1.99	76.47	2				

View this question as we may, no matter in what manner we arrange these statistics, still in each and every instance the result is the same. It will be observed that the disease seems to reach its maximum along a certain parallel of latitude in the cases of both America and Europe, this being in the instance of the former apparently the 35th, and as we pass northward towards the colder regions a steady diminution in the mortality from the disease is observed; this rule prevailing with but few exceptions, all other things being equal. Such, we have shown, is true not only of the cities, but of the various countries also. In an earlier portion of this article (see page 83) a table is given showing the average death-rates from pneumonia in the various cities of the world, 190 in all, which I have collected, this point being there shown in a most positive and decided manner.

Finally, I will present without comment the following tables, designed to show at a glance the longitudinal, latitudinal, and temperature relations of pneumonia, as deduced from the statistics of 174 cities. The numbers inclosed in parentheses indicate the number of cities of which the numbers beneath show the average death-rate from pneumonia for each 1000 of population:—

Europe.

10°W.	5°W.	0°	5°E.	10°E.	15°E.	20°E.	25°E.	30°E.	Pneu. per 1000 inhab's, (aver.)	Mean annual temp. F. (aver.)	
60°											
		(8)			(2)	(1)					
55		1.12			1.22	3.11			1.32	47.8°	
	(4)	(13)	(4)	(7)	(9)	(1)					
50	0.54	1.13	1.65	1.56	1.45	1.75			1.39	46.1°	
		(1)	(3)	(7)	(2)	(2)					
45		0.64	2.02	1.93	1.42	2.94			1.93	51.3°	
				(2)	(1)			(1)			
40				3.50	3.33			3.74	3.52	55.0°	
	0.54	1.11	1.81	1.97	1.55	2.68		3.74	Pneu. per 1000 inhab's, (aver.)	Mean annual temp. F. (aver.)	
	52.1°	49.3°	51.6°	50.0°	48.2°	47.0°		49.0°			

Latitude.

Longitude W. and E. from Greenwich.

North America.

125°	120°	115°	110°	105°	100°	95°	90°	85°	80°	75°	70°	Pneu. per 1000 inhab's, (aver.)	Mean annual temp. F. (aver.)	
50											(1)			
45											0.85	0.85	44.6°	
			(1)	(1)		(1)	(3)	(5)	(7)	(9)	(37)			
40			2.30	0.71		1.15	0.67	0.82	0.80	1.02	1.18	1.97	48.2	
	(3)	(1)			(1)		(2)	(6)	(5)	(10)				Latitude.
35	1.21	2.61			0.34		1.71	1.24	1.02	1.36		1.29	55.0	
		(1)				(1)	(2)	(4)	(1)	(1)				
30		0.98				2.33	2.16	1.84	3.00	1.15		1.91	66.2	
						(1)	(2)							
25						0.94	1.43					1.27	69.2	
	1.21	1.80	2.30	0.71	0.34	1.47	1.40	1.26	1.05	1.20	1.17	Pneu. per 1000 inhab's, (aver.)	Mean annual temp. F. (aver.)	
	○ 57.1	○ 57.5	○ 52.0	○ 47.5	○ 49.3	○ 61.9	○ 57.9	○ 56.1	○ 52.1	○ 52.6	○ 48.0			

Longitude W. from Greenwich.

Conclusions.—1st. The relations of pneumonia to altitude are definite and marked; with increase in elevation above the level of the sea, there is a steady diminution in the death-rate of pneumonia. To this rule some exceptions exist, but in the large majority of instances the relation holds good.

2d. The mean annual rain-fall of a place bears no positive relation to pneumonia; in some instances a large mortality from the disease coincides with a large precipitation of rain, in others with a small precipitation, while in as many others the contrary conditions are found to prevail.

3d. The higher the death-rate of a place from all causes, the greater the mortality from pneumonia. This rule is almost, if not actually, absolute.

4th. The larger the actual population of a locality, the greater its relative death-rate from pneumonia; the explanation for this being probably found in the following: Density of population bears an undoubted relation to the pneumonia-rate, increase in the former being followed by, or going hand-in-hand with, increase in the latter.

5th. There is a direct, positive, and unequivocal relation between the mean annual temperature of a place and its death-rate from pneumonia; the rule being that a high mortality from the disease coincides with a high mean annual temperature. Exceptions exist, but, being unusual and rather rare, their existence can hardly be considered to invalidate this rule.

6th. Proximity to large bodies of water, such as lakes, inland seas, or the ocean, exerts no appreciable influence on the pneumonia-rate.

7th. For North America, pneumonia increases in frequency as we pass from east to west; for Europe as we advance from west to east, the rate of increase being very nearly twice as great in the case of the latter as in that of the former.

8th. Pneumonia, all other things being equal, increases in frequency the further we advance from the polar regions towards the tropics; this, however, only up to a certain parallel, beyond which it seems to become less and less commonly met with, until at or near the equator, where it apparently disappears. As far as the latter part of this statement is concerned, such would seem to be the truth, judging by what few facts are at hand. Statistics for the equatorial regions are rare, and, even then, unreliable; hence I have purposely omitted to present them. So few, vague, and indefinite are they as to be almost valueless, allowing only of problematic deductions.

The foregoing conclusions apply more particularly to the Northern Hemisphere, all the statistics I have collected referring to places north of the equator; facts, save in a few instances, relating to places in the Southern Hemisphere being wanting.

ARTICLE VIII.

THE COMPARATIVE ACTION OF SULPHATE OF DATURIA AND OF SULPHATE OF HYOSCYAMIA UPON THE IRIS AND CILIARY MUSCLE.[1] By CHARLES A. OLIVER, M.D., of Philadelphia.

THE same rules[2] as in previous paper on the Comparative Action of Hydrobromate of Homatropine and of Sulphate of Atropia, have been strictly adhered to.

Observations.—1. The mydriasis of a single instillation of the one-fortieth of a grain of sulphate of daturia was consummated in sixteen to eighteen minutes; whilst the mydriasis produced by a single instillation of the one-fortieth of a grain of sulphate of hyoscyamia took place in eight to ten minutes' time.

2. The mydriasis of a single instillation of the one-twentieth of a grain of sulphate of daturia occurred in twelve minutes; whilst the mydriasis of a single instillation of the one-twentieth of a grain of sulphate of hyoscyamia took place in eight minutes' time.

[1] Second of a series of articles on the comparative action of the different mydriatics. The first being in the July, 1881, number of this Journal.

[2] For those who have not seen them, it may be important to repeat. Single instillations of the one-fortieth and the one-twentieth of a grain each, at intervals of one month. Young emmetropes chosen, a few having been previously corrected for H + Ah, in all of whom, the correcting glass and its distance from the eye were calculated for. Care taken to obtain persons of intelligence, and place them under the same conditions in reference to light and time of day. In every case, as soon as accommodation for 8n. 1½ became impossible, a convex lens was placed one-half inch before the eye—this in all instances being taken into account.

3. The utmost loss of accommodation occasioned by a single instillation of the one-fortieth of a grain of sulphate of daturia was attained in thirty-six minutes; whilst the utmost intensity of the action of a single instillation of the one-fortieth of a grain of sulphate of hyoscyamia took place in thirty minutes' time.

4. The utmost loss of accommodation occasioned by a single instillation of the one-twentieth of a grain of sulphate of daturia was attained in twenty-six minutes; whilst the utmost intensity of the action of a single instillation of the one-twentieth of a grain of sulphate of hyoscyamia took place in twenty minutes' time.

5. The single instillation of the one-fortieth or the one-twentieth of a grain each of both the sulphate of daturia and the sulphate of hyoscyamia produced full dilatation of the pupil.

6. Full ciliary paralysis was obtained in nearly every instance by the single instillation of the one-fortieth or the one-twentieth of a grain each, of both the sulphate of daturia and the sulphate of hyoscyamia. The intensity of action seeming to depend entirely upon the quality and degree of refraction, being greater in the normal emmetropic eye.

7. The dilatation of the pupil occasioned by the single instillation of the one-fortieth or the one-twentieth of a grain of sulphate of daturia, remained *ad maximum* for twenty-four to thirty-six hours; whilst that of equivalent amounts of sulphate of hyoscyamia remained intact for thirty-six to forty-eight hours. The time of the greater amount being longer in both instances.

8. The total ciliary paralysis occasioned by the single instillation of the one-fortieth or the one-twentieth of a grain of sulphate of daturia is maintained for twenty-four to thirty-six hours; whilst that of equivalent amounts of sulphate of hyoscyamia is stationary for thirty-six to forty-eight hours. The time of the greater amount being longer in both instances.

9. By accurate observations made many times daily, after the mydriasis and ciliary paralysis of the single instillation of the one-fortieth of a grain of sulphate of daturia were established, it was found that the pupil became normal in about fifteen days, and full accommodation returned in nine to ten days' time; whilst with the single instillation of an equivalent amount of sulphate of hyoscyamia, pupillary diameter became normal in about seventeen days, and full accommodation was regained in ten days' time.

10. By accurate observations made many times daily after the mydriasis and ciliary paralysis of the single instillation of the one-twentieth of a grain of sulphate of daturia were established, it was found that the diameter of the pupil became normal in about sixteen to seventeen days, and full accommodation was restored in ten days' time; whilst in the mydriasis and ciliary paralysis of the single instillation of the one-twentieth of a grain of sulphate of hyoscyamia, the pupil became normal in seven-

TABLE I.—*Comparative action of the one-fortieth of a grain each.*

Explanation.—The numbers under the line A, A′ designate the number of minutes after instillation. The numbers from B to A, ciliary power, expressed in dioptrics. The numbers from A to E, the horizontal diameter of the pupil in millimetres. The dotted line the action of daturia. The ruled line the action of hyoscyamia. The heavy dots the times of examinations.

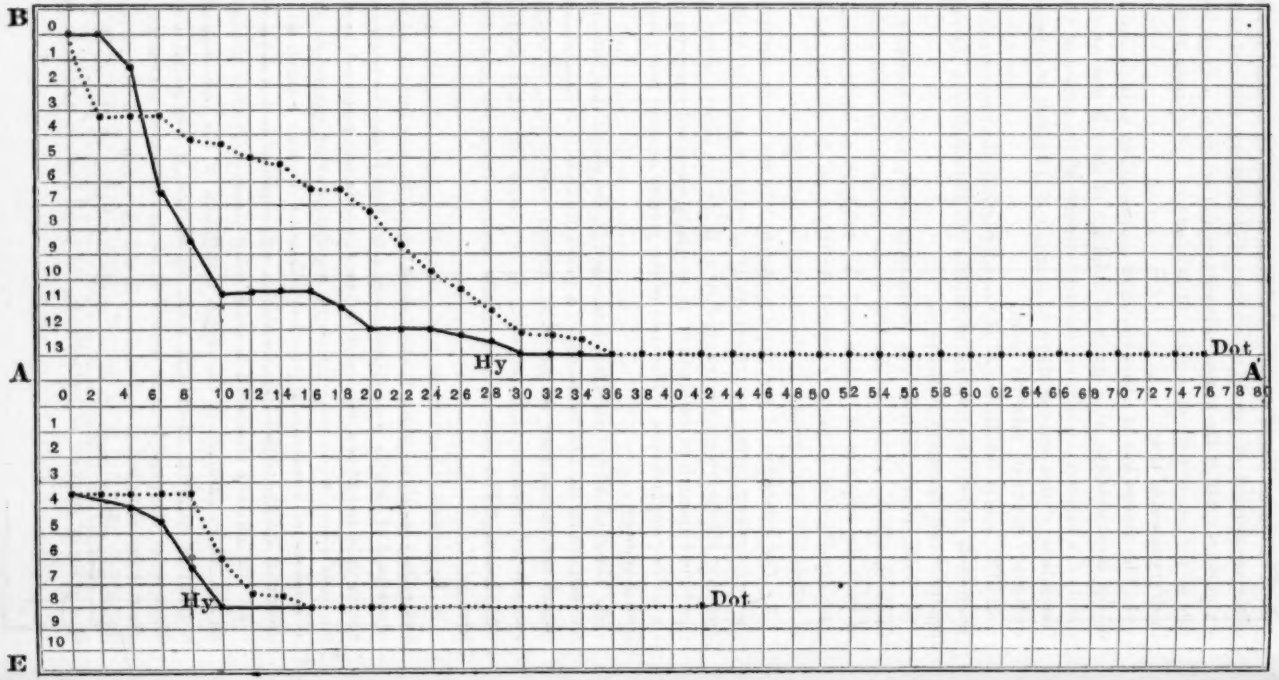
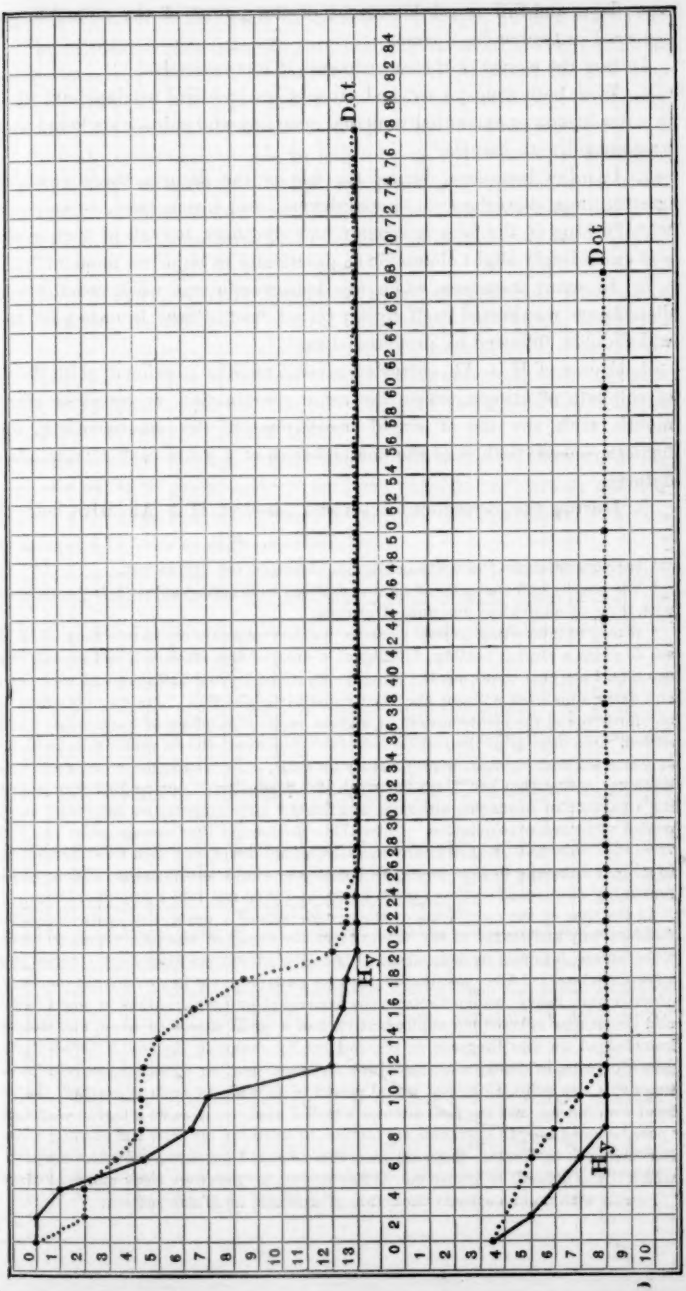


TABLE II.—*Comparative action of the one-twentieth of a grain each.*



teen days, and full re-establishment of the power of the ciliary muscle occurred in twelve days' time.

During the course of the experiments it was noticed—

1. With both drugs, a marked sense of conjunctival astringency, which in a few instances amounted to actual smarting and pain—this being more pronounced with daturia.[1]

2. In a few instances, during the use of the daturia, there was some constitutional disturbance—faucial dryness and bitter taste, accompanied with flushing of the face, headache, and giddiness, but all of such a mild and exceedingly slight character as practically to be of no moment.[2]

3. In many instances, when the hyoscyamia was used, constitutional disturbance manifested itself by dry throat, flushed face, intense giddiness, wakefulness, followed by profound sleep.[3]

4. A case of H + Ah, corrected several months previously with the use of sulphate of atropia, chose the same combination, at intervals of one month, with the use of single instillations of the one-twentieth, one-fortieth, one-sixtieth, and the one-eightieth of a grain each of sulphate of daturia.

5. During the correction of several cases of H + Ah, with both the

[1] In every specimen there was acidity, as shown by the litmus test.

[2] The gravity and character of these symptoms were remarkable in being comparable with those of equivalent amounts of atropia.

[3] It may be interesting to note a case of marked susceptibility to this drug. J. S. H., æt. 23 years, a strong, healthy, intelligent woman of firm character, had several times submitted her eyes to my use in these investigations, having had atropia, homatropine, and daturia instilled without the least constitutional effect. On two occasions the one-fortieth and the one-twentieth of a grain each of sulphate of hyoscyamia was instilled. One hour after the instillation of the one-twentieth of a grain, she complained of giddiness and vertigo, with inability to walk—this lasting for more than thirty minutes: saying that her "legs felt weak and head dizzy," during this time not having a particle of headache, although face flushed and temperature increased, accompanied with cardiac palpitation. Pulse 112 to the minute (her average pulse rate being 72 to 76). She had great difficulty in reaching her home, and then went immediately to sleep, awakening in four hours, so hoarse she could hardly speak. Went to bed, remaining awake and restless for six hours, and then fell into a profound sleep.

At the time of the instillation of the one-fortieth of a grain, she again complained (without any knowledge of the similarity of the drug) of faucial dryness, giddiness, wakefulness, followed by deep sleep. I here give an extract from a note mailed to me a few days later: "After instillation, my eyes gave me great inconvenience on account of their dull, heavy, leaden feeling; the dryness of lining membrane of nasal cavities and throat also affected me unpleasantly; had a great desire to sleep, but sleep acknowledged its unwillingness to comfort me, by changing my couch into a floating pillow of what evidently must have been hydrogen gas, so light it appeared. Sometimes this airy balloon-like bed would persist in turning in such a position that my head would drag, and the vain attempt which I made to assume a more comfortable 'pose,' seemed only to aggravate my torture, by straining my back and causing a peculiar feeling in my brain. Released from this misery, I fell into a rock-like sleep, from which it was difficult to arouse me. After arising, my legs were weak and head dizzy."

I await with much curiosity the action of duboisia upon this subject.

drugs, it was noticed that upon the patient's return in twenty-four hours after the primary instillation, full paralysis had occurred during the intervening time, and the correct combination chosen without the use of a second instillation; proving that through strain and irritation, the ciliary muscle had not been paralyzed at the proper time for a normal eye.

6. In many cases of H + Ah, in which latent hypermetropia was high, the astigmatism at a comparatively rare angle, accompanied with much retinal and choroidal disturbance, it was impossible to obtain complete paralysis of the ciliary muscle by single instillations of the amounts given.

7. Unreliability of results, dependent upon miscellaneous selection of drugs. During the first series of these experiments, in which it was found necessary to verify previous calculation in two normal eyes, different results were obtained from specimens obtained from other sources. Reliable articles were gotten, and care taken to prepare fresh solutions, and use new pipettes in every individual case.

Conclusions.—1. A single instillation of either the one-fortieth or the one-twentieth of a grain each of both the sulphate of daturia and the sulphate of hyoscyamia, is sufficient to paralyze accommodation in a normal emmetropic or a healthy ametropic eye.

2. No dependence can be placed upon the action of a single instillation of either the one-fortieth or the one-twentieth of a grain each, of both the sulphate of daturia and the sulphate of hyoscyamia, upon the ciliary muscle of an unhealthy ametropic eye.

3. A single instillation of either the one-fortieth or the one-twentieth of a grain each of both the sulphate of daturia and the sulphate of hyoscyamia, is of no value in the estimation of the degree of refraction in marked cases of asthenopic ametropia; but may be of great service in either verifying previous results or primarily determining errors in healthy ametropic eyes.

4. Maximum dilatation of the pupil is produced by a single instillation of either the one-fortieth or the one-twentieth of a grain each of both the sulphate of daturia and the sulphate of hyoscyamia.

5. The total paralysis[1] of the ciliary muscle, occasioned by a single instillation of either the one-fortieth or the one-twentieth of a grain of sulphate of daturia, is attained later and lost sooner than the total paralysis occasioned by a single instillation of equivalent amounts of sulphate of hyoscyamia.

6. The mydriasis of a single instillation of either the one-fortieth or the one-twentieth of a grain of sulphate of daturia is not so quickly attained,

[1] Complete paralysis is not necessarily meant. The use of the terms "total paralysis" and "full action" are synonymous, and imply the utmost action of the drug, which may be either complete or incomplete.

and is of shorter duration than that of a single instillation of equivalent amounts of sulphate of hyoscyamia.

7. The full action of a single instillation of either the one-fortieth or the one-twentieth of a grain of sulphate of daturia upon the iris and ciliary muscle, remains *intact* for a shorter time than that of a single instillation of equivalent amounts of sulphate of hyoscyamia; the time of the latter being almost double that of the former.

8. With the use of the amounts given of both the drugs, primary calculation of refractive error may be accurately obtained without second instillation, after the lapse of twenty-four hours.

9. The long-continued dilatation of the pupil and the slow return of ciliary power occasioned by the amounts given of both the drugs, render them absolutely useless where we desire accurate ophthalmoscopic examination in cases dependent upon their use.

10. The astringent and irritant action of the two drugs upon the conjunctiva may be avoided by the use of a neutral salt.

11. The comparatively rare and slight transient constitutional effect caused by a single instillation of the amounts given of sulphate of daturia may be considered as perfectly harmless, and of no consequence.[1]

12. The grave constitutional disturbance sometimes seen during the use of a single instillation of the amounts given of sulphate of hyoscyamia, should render us cautious in its employment.

PHILADELPHIA, 1507 Locust Street.

ARTICLE IX.

A CASE OF OBSTRUCTION OF THE INFERIOR CANALICULUS OF THE EYE BY DACRYOLITHS.

BY HENRY G. CORNWELL, M.D., of Columbus, Ohio, Clinical Lecturer on Ophthalmology and Otology, Starling Medical College, Columbus, Ohio.

J. P., æt. 46, Columbus, Ohio, came under the observation of the writer, March 20, 1882, complaining of an interference with the escape of the tears from the left eye, which had annoyed him for ten years. An examination revealed lachrymal conjunctivitis, the lachrymal punctum slightly everted, its orifice of normal size, and the walls of the canal somewhat thickened. No accumulation of tears in, or any evidence of inflammation of the lachrymal sac. Suspecting a stricture of the canaliculus, this passage was slit up by means of a delicate pair of scissors, one blade of the instrument passing readily through the canal without obstruction. On the following day on attempting to separate the edges of the incision, in order to prevent their union, by means of a Bowman probe held vertical, the instrument struck a gritty substance, which proved to be one of four

[1] During the progress of these experiments, the author has been forcibly struck with the similarity of the behaviour of atropia and daturia.

dacryoliths, which were arranged bead-like along the floor of the canal. The canal itself, after their removal, was found to be much enlarged as a result of this calcareous deposit.

The concretions were blackish-gray, and of irregular, grape-cluster-like form. They were placed in the hands of Mr. Curtis C. Howard, professor of chemistry in Starling Medical College, who subjected the smallest one to chemical analysis. The following is his report:—

"The dacryoliths were found to weigh as follows: .234, .163, .134, .090 grain. The last one contained: organic matter 28.3 per cent., inorganic matter 71.7 per cent. The inorganic matter was found to be chiefly, if not entirely, phosphate of lime; the small quantity (.09 grain) preventing a complete examination for all acids and bases."

Such concretions, formed by a deposit of the saline elements of the tears, are very rarely observed.[1] They have been found in the lachrymal gland, on the conjunctival surface of the upper lid,[2] in the ducts of the Meibomian glands, in the conjunctival *cul-de-sac*, in the lower canaliculus and lachrymal duct. The cause of their formation is not clearly understood. In some instances the deposit is due to a change in the physical properties of the fluid corresponding in character to that which brings about the formation of urinary, salivary, and biliary calculi. In other instances they appear to be due to the calcification of a fungus formation, occurring in connection with a chronic catarrhal inflammation of the lachrymal passages. They are not observed as a result of dacryocystitis, or complete obstructions of the lachrymal duct, due to strictures.—(*Mackenzie and others.*)

181 EAST STATE ST.

ARTICLE X.

AN ANALYTICAL EXAMINATION OF ONE HUNDRED CASES OF EXTIRPATION OF THE KIDNEY; WITH A TABULAR RECORD ARRANGED CHRONOLOGICALLY.

By ROBERT P. HARRIS, A.M., M.D., of Philadelphia.

THREE forms of operating upon the kidney are now designated by acknowledged and distinct titles, between which there should be no mistake either in the subjects of descriptive papers or the indices of journals. *Nephrotomy*, *nephrolithotomy*, and *nephrectomy* are sufficiently clear in

[1] Among 25,740 eye cases treated at the Brooklyn Eye and Ear Hospital during the last thirteen years, 2 cases having dacryoliths were observed (Thirteenth Annual Report of The Brooklyn Eye and Ear Hospital, Jan. 1882).

[2] Two years ago a case, the patient a girl, came under the writer's care, in which there were found four or five small chalky concretions on the palpebral conjunctiva of one eye, which could only be removed with a knife. They produced effervescence when dropped into dilute mineral acid.

their derivations to explain their own meaning. We have in this article to deal with the last of the three, which is not infrequently preceded by the first or second, in the hope that the removal of the organ may be avoided.

We may also divide the cases of nephrectomy, as shown by the table appended, into *anticipated* and *non-anticipated*. In the early days of the operation, it will be noticed, that the operator was nearly always at fault in his diagnosis, and did not discover the true nature of the abdominal tumour to be removed, until his introduced hand recognized its lumbar attachments. Thus a hydronephrosis was usually taken for an ovarian cyst; and a solid renal tumour for one of the liver or spleen. Where a cyst was tapped, the character of its fluid contents aided to determine its renal origin; but where this was not done, the surgeon was often not aware of the nature of the case, until already engaged in operating upon it.

The advances that have been made in the differential diagnosis of abdominal tumours, and especially through the introduction of *aspiration* by Dieulafoy, have diminished the proportion of errors, and enabled the operator, by the microscope and chemical tests, to detect the existence of renal cystic fluids; but where solid tumours exist, there will always be more or less uncertainty, unless the character of the urine, early pains experienced, and history of the first detection of the growth, are such as to lead to a correct diagnosis. Unfortunately, the dangers of aspiration, even when capillary, are such that it is often unsafe to use it as a means of early diagnosis, and must be followed as soon as possible by the removal of the cyst under examination. It is far from safe to aspirate even an ovarian cyst a few days before an intended ovariotomy, and from the nature of the growth and its contents, it is much more dangerous to do the same to a hydronephrosis containing urea, and often purulent fluid mixed with the urine.

To the late Gustav Simon, of Heidelberg, must be given the credit of having performed the first *anticipated* nephrectomy, and also for initiating the lumbar method of operating. Fortunately for humanity and the reputation of the operator, his case recovered, for had he failed, he would not only have been censured for attempting to cure a uretral fistula by the removal of a sound kidney; but the future of the operation, as more legitimately demanded, would have been decidedly darkened, and its present reputation achieved at a much later period. As it was, the first years of the operation were very discouraging, compared with the results more recently recorded; for of the first twelve cases, covering a period of as many years, but two recovered.

Although nephrectomy may be said to have legitimately commenced with Simon, his was the fourth operation, two of which were in this country, in which a kidney was extirpated; those preceding him having acted under a misconception of what was required to be done in their

respective cases. After the result of Simon's case became known, great efforts were made to find some historical record of a prior operation conceived and accomplished as his had been; but no evidence has been produced, and he, therefore, stands alone in the honour. It was long known to the medical world, that a human being, or one of the lower animals, might live in health with only one kidney, as shown by autopsies, and the experiments of vivisectors; but it was not until 1869 that this fact was established in the case of a living woman, under the knife of a surgeon.

In the year 1873, twelve years after the first nephrectomy, the tide of results changed for the better, and after a succession of six recoveries the operation came to be regarded with greater favour; and since that time has been more and more abundantly performed in each successive year, until now, of the abdominal operations it is, perhaps, only second in frequency to oöphorectomy, as instituted by Battey, of Georgia, especially in Germany and England. As an operation of interest, it takes rank above that of extirpation of the uterus for cancer, as its cures are in the majority of instances of a more permanent character, the kidney being subject to forms of disease of which malignancy is only an occasional element. To remove a cancerous uterus so as to achieve a favourable result, requires great care and skill on the part of the operator; but the probability of a return of the disease with fatal effect, limits very much the satisfaction of success. It is true that the kidneys are liable to be both attacked with the same disease, and this is especially the case with tuberculosis and calculus; but it is astonishing how frequently calculi are found only on one side, although in all probability formed from the same diathesis in both, but detained only in one by its smaller-sized ureter. The "wandering" or floating kidney, so common among the women of Germany, appears to be a fruitful cause of renal suffering, and has in a number of instances been removed, especially by A. Martin, of Berlin. This condition is found to affect mainly the right kidney of women who have borne children, and has been attributed by some to the pregnant state, and by others to the wearing of tight compressing strings and bands around the waist to secure the clothing. Dr. Oser, of Vienna, is given as authority for the opinion, that one woman in ten who have borne children, among the poor of Austria, has a right movable kidney, which he claims results from the ascent of the uterus loosening its peritoneal attachments. It has been asserted that this condition is congenital, and not acquired; but there is strong ground for the belief that it is due to a gradual elongation of the attachments of the kidney, which possibly may be congenitally relaxed, as a commencement of the prolapsus. A movable kidney may be only a little less fixed than one normally secured, and is not likely to become painful unless it should be gradually drawn into the floating condition, when it may become so by disease, or mechanical obstruction to the escape of urine.

Table of 100 *Operations.*

No.	Date.	Operator.	Locality.	Sex	Age	Seat of incision.	Diseased condition of the subject operated upon.	Died.	Recovered.
1	June 4, 1861	E. B. Wolcott	Milwaukee, U. S.	M.	58	Abdomen	Encephaloid kidney. Diagnosed a cyst of the liver.	D.	
2	June 26, 1867	Spiegelberg	Breslau	F.	42	A.	Hydatid cyst of kidney. Diagnosed an ovarian cyst. *Removal incomplete.*	D.	
3	April, 1868	Peaslee	New York	F.	..	A.	Solid renal tumour. Diagnosed an ovarian growth	D.	
4	April 2, 1869	Simon	Heidelberg	F.	46	Loin	Fistula of ureter produced in an ovaro-hysterectomy; kidney not diseased.	..	R.
5	Nov. 15, 1869	Esmarch	Kiel, Ger.	F.	19	A.	Large cyst of kidney, with pelvic adhesions; diagnosed ovarian.	D.	
6	?	Reported by S. Wells	London	F.	..	A.	Fibro-cystic tumour of uterus, with an adherent normal kidney.	D.	
7	Dec. 1870	Gilmore	Mobile, U. S.	F.	39	L.	Painful movable shrunken fibrous kidney; woman 5 months pregnant, and went to full term.	..	R.
8	Mar. 23, 1871	Von Brüns	Wurtemburg	M.	..	L.	Gunshot wound of kidney converting the organ into a large abscess.	D.	
9	June, 1871	Meadows	London	F.	..	A.	Large cyst of kidney. Diagnosed ovarian.	D.	
10	Aug. 8, 1871	Simon	Heidelberg	F.	30	L.	Small fibrous kidney containing blood-clots. Diagnosis, calculous pyelitis.	D.	
11	May 14, 1872	Durham	London	F.	43	L.	Painful kidney: organ appeared healthy; nephrotomy had failed to give relief.	D.	
12	May 16, 1872	G. A. Peters	New York	M.	36	L.	Tuberculous kidney. Diagnosis, calculous pyelitis; other kidney found diseased on autopsy.	D.	
13	Jan. 7, 1873	Brandt	Klausenberg Austria	M.	25	L.	Extrusion of kidney through a knife-wound in the loin.	..	R.
14	Dec. 2, 1873	Campbell	Dundee, Scotland	F.	49	A.	Cyst, involving lower third of kidney; presumed ovarian.	..	R.
15	Apr. 14, 1875	Le Dentu	Paris	M.	42	L.	Hydronephrosis and perinephritic abscess	..	R.
16	1875	Marvaud	Algiers	F.	y'ng	L.	Extrusion of kidney through a wound with a yatacan.	..	R.
17	Dec. 7, 1875	Langenbuch	Berlin	F.	32	L.	Sarcoma of kidney. (?) Organ of a sack-form; not examined microscopically.	..	R.
18	?	Langenbuch	Berlin	M.	20	A.	Painful floating kidney.	..	R.
19	Apr. 20, 1876	Kocher	Bern	F.	35	A.	Sarcomatous floating kidney. Colon and contiguous parts involved. *Removal incomplete.*	D.	
20	July 4, 1876	Hüter	Greifswald, Germany	F.	4	A.	Sarcoma of left kidney; weight nearly 5 pounds. Presumed a splenic or ovarian growth.	D.	
21	July 18, 1876	Billroth	Vienna	F.	46	A.	Hydronephrosis. Presumed an ovarian cyst.	D.	
22	?	Hamilton	China	M.	..	L.	Extrusion of kidney through a knife-wound.	..	R.
23	Jan. 7, 1877	Jessop	Leeds, Eng.	M.	2½	L.	Encephaloid kidney; died of a return of the disease in nine months.	..	R.
24	Jan. 28, 1877	Heath	London	F.	24	A.	Calculous hydronephrosis; presumed to be ovarian.	D.	
25	Aug. 6, 1877	Dumreicher	Vienna	M.	33	L.	Sacculated and dilated kidney; diagnosed a calculous pyelitis.	D.	

No.	Date.	Operator.	Locality.	Sex	Age	Seat of incision.	Diseased condition of the subject operated upon.	Died.	Recovered
26	Sept. 27, 1877	Kocher	Bern	M.	2½	Abd'm	Adeno-sarcoma of kidney.	D.	
27	Feb. 18, 1878	Müller	Oldenburg, Germany	M.	21	Loin	Calculous hydronephrosis	..	R.
28	Mar. 14, 1878	Byford	Chicago, U. S.	F.	39	A.	Encephaloid kidney; 4½ pounds.	..	R.
29	Mar. 15, 1878	A. Martin	Berlin	F.	49	A.	Painful floating kidney; found healthy in appearance.	..	R.
30	Aug. 15, 1878	A. Martin	Berlin	F.	30	A.	Painful floating kidney; no appearance of disease	..	R.
31	Nov. 14, 1878	A. Martin	Berlin	F.	25	A.	Painful floating kidney.	..	R.
32	Dec. 9, 1878	A. Martin	Berlin	F.	53	A.	Sarcoma of kidney, 28 oz.	..	R.
33	Jan. 9, 1879	Zweifel	Erlangen	F.	29	L.	Uretro-uterine fistula, after labour, with atrophy of the kidney.	..	R.
34	Jan. 19, 1879	Czerny	Heidelberg	M.	59	A.	Malignant tumour of kidney. Aorta ligated to arrest hemorrhage.	D.	
35	April 1, 1879	Billroth	Vienna	F.	35	A.	Retro-peritoneal myo-fibroma with a sound kiddey attached. Presumed to be an ovarian cyst.	D.	
36	April, 1879	Urbinati	Cesena, Italy	F.	56	L.	Calculous pyelitis.	D.	
37	Apr. 19, 1879	A. Martin	Berlin	F.	48	A.	Painful floating kidney.	D.	
38	May 22, 1879	Czerny	Heidelberg	F.	32	L.	Fistula and pyonephritic abscess.	..	R.
39	June 23, 1879	A. W. Smyth	New Orleans U. S.	F.	35	L.	Painful floating kidney.	..	R.
40	June 24, 1879	A. Martin	Berlin	F.	24	A.	Painful floating kidney	D.	
41	July 17, 1879	E. Martini	Hamburg	F.	37	A.	Painful floating kidney.	..	R.
42	Aug. 11, 1879	Lossen	Heidelberg	F.	37	A.	Angio-sarcoma attached to a sound movable kidney; woman pregnant; aborted in 12 hours.	..	R.
43	Oct. 6, 1879	Czerny	Heidelberg	F.	37	A.	Hydronephrosis.	..	R.
44	Oct. 24, 1879	Merkel	Nürnberg	F.	28	A.	Painful floating kidney, affected with fatty degeneration.	D.	
45	Nov. 4, 1879	Bardenheuer	Cologne	F.	46	L.	Pyonephrosis and fistula.	..	R.
46	Nov. 23, 1879	Bardenheuer	Cologne	F.	22	L.	Pyonephrosis and abscess	D.	
47	Dec. 23, 1879	A. E. Barker	London	F.	21	A.	Encephaloid floating kidney.	D.	
48	Jan. 3, 1880	Thornton	London	F.	7	A.	Hydronephrosis of left kidney.	..	R.
49	Jan. 16, 1880	Savage	London	F.	56	A.	Hydronephrosis.	..	R.
50	Feb. 17, 1880	Lucas	London	M.	36	L.	Pyonephrosis, with lumbar fistula.	..	R.
51	Mar. 9. 1880	Czerny	Heidelberg	M.	23	L.	Hydronephrosis with sarcoma.	D.	
52	Apr. 3, 1880	Czerny	Heidelberg	F.	27	L.	Uretro-vaginal fistula of right side; kidney not diseased.	..	R.
53	Apr. 24, 1880	Couper	London	F.	y'ng	L.	Saccular and dilated kidney containing fetid pus.	..	R.
54	May 3, 1880	Czerny	Heidelberg	F.	40	A.	Hydronephrosis of right kidney; lived 48 days.	D.	
55	May 15, 1880	Czerny	Heidelberg	F.	23	L.	Calculi in left kidney; pelvis dilated.	..	R.
56	May 19, 1880	Credé	Dresden	F.	26	L.	Uretro-uterine fistula.	..	R.
57	May 20, 1880	Le Forte	Paris	M.	23	L.	Lumbar renal fistula; kidney very slightly altered	D.	
58	May 24, 1880	F. Lange	New York	F.	47	L.	Cystic kidney containing concretions; other kidney found useless on autopsy.	D.	
59	May 29, 1880	Spiegelberg	Breslau	F.	27	A.	Enlarged kidney, not apparently altered in structure. Diagnosed a hydronephrosis.	..	R.
60	July, 1880	Raffa	Rovigo, Italy	F.	20	L.	Suppurative nephritis, with purulent infection and tuberculosis. Lived four months.	..	R.
61	July 5, 1880	A. E. Barker	London	F.	32	L.	Calculous pyonephrosis.	D.	
62	July 20, 1880	A. Martin	Berlin	F.	..	A.	Painful floating kidney.	D.	
63	Aug. 2, 1880	Czerny	Heidelberg	F.	11 mo.	A.	Large adenoma of left kidney.	D.	

No.	Date.	Operator.	Locality.	Sex	Age	Seat of incision.	Diseased condition of the subject operated upon.	Died.	Recovered
64	Aug. 19, 1880	J. H. McClelland	Pittsburg, U. S.	F.	20	Loin	Calculous pyo-hydronephrosis, with fistula in lumbar and inguinal regions.	..	R.
65	Oct. 3, 1880	Bardenheuer	Cologne	F.	48	L.	Cancer of uterus, involving the left ureter.	D.	
66	Oct. 5, 1880	A. E. Barker	London	F.	38	L.	Calculous pyonephrosis.	D.	
67	Nov. 28, 1880	A. Martin	Berlin	F.	.	Abd'm	Painful floating kidney.	..	R.
68	1880	Langenbuch	Berlin	F.	30	A.	Painful floating kidney.	..	R.
69	?	Bardenheuer	Cologne	..	5	L.	Pyonephrosis.	..	R.
70	Jan. 10, 1881	Czerny	Heidelberg	F.	35	L.	Pyonephrosis of right kidney.	..	R.
71	Jan. 30, 1881	Clementi	Catania, Italy	F.	28	L.	Pyonephrosis of left kidney.	..	R.
72	Feb. 22, 1881	W. M. Baker	London	F.	7	L.	Tuberculosis of kidney, 2¾ oz.	..	R.
73	Feb. 22, 1881	Stockwell	Bath, Eng.	M.	54	L.	Sacculated and enlarged kidney. 10 oz.	D.	
74	Apr. 23, 1881	Czerny	Heidelberg	M.	51	L.	Angio-sarcoma of left kidney.	..	R.
75	?	Barwell	London	F.	16	L.	Pyonephrosis.	D.	
76	May 5, 1881	Barwell	London	M.	18	L.	Calculous pyelitis and retroperitoneal abscess.	..	R.
77	May 7, 1881	Czerny	Heidelberg	F.	45	A.	Sarcoma of lower part of left kidney.	D.	
78	? 1881	Bardenheuer	Cologne	..	..	L.	Hæmaturia and renal colic	..	(?)[1]
79	? 1881	Bardenheuer	Cologne	M.	20	L.	Renal calculus and pyonephritic abscess.	..	(?)[1]
80	? 1881	Bardenheuer	Cologne	M.	26	L.	Sarcoma of kidney.	..	(?)[1]
81	June 17, 1881	Czerny	Heidelberg	M.	52	L.	Calculous hydronephrosis	D.	
82	July 14, 1881	Godlee	London	F.	57	A.	Calculous pyelitis.	D.	
83	July 24, 1881	Rosenbach	Göttingen	M.	42	A.	Calculous pyelitis.	..	R.
84	July 25, 1881	Czerny	Heidelberg	M.	40	L.	Sarcoma of left kidney.	..	(?)[1]
85	Aug. 2, 1881	F. A. Kehrer	Heidelberg	F.	32	A.	Hydronephrosis.	..	R.
86	Aug. 3, 1881	Starck	Danzig	F.	42	L.	Wound of ureter in removing cancer of the uterus; nephrectomy 6 days later	..	R.
87	Sept. 5, 1881	Whitehead	Manchester	M.	46	A.	Solid tumour of left kidney 1 lb. 4 oz.	D.	
88	Sept. 10, 1881	Hicguet	Liege, Belg.	F.	6	A.	Sarcoma of kidney.	..	R.
89	Oct. 15, 1881	T. G Thomas	New York	F.	21	A.	Fibro-cyst involving kidney.	..	R.
90	Oct. 23, 1881	G. Lepold	Leipsig	F.	23	A.	Blood-cyst of lower part of left kidney.	..	R.
91	Nov. 1881	Frattina	Ponderone, I.	F.	28	L.	Pyonephrosis of left kidney.	D.	
92	Nov. 1881	O. O. Burgess	San Francisco	M.	53	A.	Large cystic tumour of kidney.	D.	
93	Dec. 1881	H. Marsh	London	M.	35	L.	Cystic kidney. *Removal incomplete.* Other kidney found sound, on autopsy.	D.	
94	?	Lücke	Germany	M.	60	..	Carcinoma of kidney; other kidney contracted and cystic.	D.	
95	?	Baum	Danzig	F.	..	..	Hydronephrosis of left kidney.	D.	
96	? 1882	Golding Bird	London	M.	y'ng	L.	Tuberculosis of kidney.	D.	
97	? 1882	Heywood Smith	London	..	..	A.	Hydronephrosis.	(?)	
98	Mar. 10, 1882	James Adams	London	M.	..	L.	Medullary sarcoma with hæmaturia, presumed a calculous pyelitis	(?)	
99	Mar. 11, 1882	Thornton	London	F.	..	A.	Pyonephrosis of right kidney.	..	R.
100	Mar. 15, 1882	Thornton	London	..	..	A.	Cystic, suppurating kidney, 4 lbs. 7 oz.	..	R.

[1] These have generally been credited in the column of *recoveries*, although I cannot find any record to that effect.

Causes of Death in 45 Cases.

No.	Operator.	Cause of death.	No.	Operator.	Cause of death.
1	Wolcott	Exhaustion in 15 days from profuse purulent discharge	54	Czerny	Pyæmia without peritonitis; abscesses in parotid, over the sacrum, and in the lungs; died in 48 days. Parotitis in 2d week.
2	Spiegelberg	? in 26 hours.			
3	Peaslee	Peritonitis, in 50 hours.			
5	Esmarch	Infarction of lungs in 36 hrs.			
6	Per S. Wells	? on the 3d day.	57	Le Fort	Pain and vomiting in 50 hrs.
8	Von Brüns	Shock, in 10 hours; other kidney diseased.	58	Lauge	Anuria; both kidneys diseased.
9	Meadows	Hemorrhage from the pedicle, on the 6th day.	61	Barker	Shock in 3 hours.
			62	Martin	Chronic peritonitis, in 6 weeks.
10	Simon	Pyæmia, in 31 days; appeared the 21st day.	63	Czerny	Septic peritonitis, in 3 days.
11	Durham	? on the 7th day.	65	Bardenheuer	Collapse, on 2d day.
12	Peters	Exhaustion, in 65 hours; no peritonitis or uræmia.	66	Barker	Shock, in 12 hours.
			73	Stockwell	Secondary hemorrhage, 10 hours after operation.
19	Kocher	Peritonitis on the 3d day.			
20	Hüter	Hemorrhage, under the operation, from the renal vessels.	75	Barwell	Uræmia, on the 5th day.
			77	Czerny	Hemorrhage from renal vein
			81	Czerny	Anuria, in 37 hours: other kidney atrophied.
21	Billroth	Peritonitis, on the 2d day.			
24	Heath	Peritonitis, on the 6th day.	82	Godlee	Shock and anuria in 24 hrs.; other kidney healthy.
25	Dumreicher	Collapse, next day; chest opened in resection of rib.			
			87	Whitehead	Shock, exhaustion, and slight peritonitis on 4th day.
26	Kocher	Septic peritonitis, on 3d day.			
34	Czerny	Shock, after hemorrhage, in 10 hours.	91	Frattina	Constant vomiting, from 23d to 31st day.
35	Billroth	Septic peritonitis, in 5 days.			
36	Urbinati	Peritonitis on the 3d day.	92	Burgess	Shock, in 30 hours.
37	Martin	Peritonitis, in 3 days.	93	Marsh	Anuria in 30 hours; other kidney of healthy appearance.
40	Martin	Septic peritonitis.			
44	Merkel	Uræmia, in 5 days.			
45	Bardenheuer	Septicæmia, in 10 days.	94	Lücke	Uræmia in 4 days; other kidney contracted and cystic.
47	Barker	Pulmonary embolism in 45 hours.			
51	Czerny	Collapse, in half an hour.	95	Baum	Peritonitis in 2 days.
			100	G. Bird	Collapse.

N. B.—The numbers correspond with those of the cases in the preceding table.

Of floating kidneys there have been 16 removed by nephrectomy, with 10 recoveries. Of the 6 fatal cases, 1 was affected with sarcoma of the removed organ, 1 with encephaloid, and 1 with fatty degeneration. There was malignancy in but one of the recovered cases. Martin, of Berlin, performed one-half of the operations, saving 5 of the 8 cases. Fifteen of the subjects were women and 1 was a man, who was of the 10 saved. Two operations were by the lumbar incision, both saved; and 14 by the abdominal, 8 saved.

In 18 cases the kidney was either affected with malignant disease (17), or intimately adherent to a growth of this nature (1). These are recorded as *encephaloid*, 4; *sarcoma*, 10; *angio-sarcoma*, 2; *carcinoma*, 1; and simply *malignant*, 1. Of these cases 9 are reported as having died, and 6 recovered; the other three were under treatment when last heard from.

Of other prominent diseased conditions calling for the operation we find the following, viz.: Large cysts of the kidney, 4 died, 1 recovered; hydronephroses, 4 died, 4 recovered; calculous hydronephroses, 2 died, and 2 recovered; hydronephrosis with sarcoma, 1 died; pyonephrosis, 3 died, and 6 recovered; calculous pyonephrosis, 2 died; calculous pyelitis, 3

died, and 1 recovered; uretral fistulæ, 1 died, and 6 recovered; and tuberculosis, 2 died, and 2 recovered.

In 96 cases in which the site of incision is recorded, we find 46 abdominal and 50 lumbar operations. Of the former, 23 died, and 23 recovered; and of the latter 19 died, 27 recovered, and 4 are yet to hear from.

Of 62 women operated upon, 28 died, and 34 recovered; of 27 men, 14 died, 9 recovered, and 4 are still to hear from; and of 8 children, 3 died, and 5 recovered.

Of the 100 cases operated upon, 45 have died, 49 have recovered, and 6 were still under treatment when last heard from; these last include cases 78, 79, 80, and 84 of the record of 1881, as given by Prof. Czerny, of Heidelberg, before the International Medical Congress in London. From this record of Czerny, and the more recent one of Mariotti, of Italy, must be excluded the operation credited to "*Mynter*," whose nationality is not given. Upon tracing up this matter by correspondence, I find that the case is one of nephrotomy, and belongs to the well-known surgeon of Buffalo, Dr. Herman Mynter. It was his intention to have removed the kidney, but this was found impracticable by reason of intimate connections with the surrounding parts. After the woman's death, which was from pneumonia on the twentieth day, the kidney was found densely adherent, not only to the tissues around, but to have formed adhesions with the colon and pancreas. The case was one of calculus of the kidney, which produced a pyelitis, a pyelo-nephritis, abscess of the kidney, and perinephritis with adhesions. After death a large abscess was found in the top of the gland.

The one hundred operations are credited to the different countries in which they have been performed, as follows, viz.: to Germany, 50—28 recoveries, 18 deaths, and 4 to hear from as to the final result; England, 24—9 recoveries, 13 deaths, and 2 recent cases to hear from; United States, 10—5 recoveries, and 5 deaths; Austria, 4 deaths: Italy, 2 recoveries, and 2 deaths; Switzerland, 2 deaths; France, 1 recovery, and 1 death; Belgium, 1 recovery; Scotland, 1 recovery; Algiers, 1 recovery, under a French surgeon; and China, 1 recovery under an American. Of these, London has the credit of 21 operations; Heidelberg, 17; Berlin, 11; and Cologne, 7; which collectively (56), is probably about one-half of the cases up to the present time.

Nephrectomy may be safely claimed to save at least one-half of the cases operated upon. The statistics show a higher rate of cure than this; but we must make allowance for unreported cases, of which it is probable there are very few, except what belong to the past year. It has been satisfactorily demonstrated, that a woman or man may spare one kidney without impairment of health, provided the one left is perfectly sound; it has also been shown that life may be materially prolonged after the extirpation of a cancerous or other malignant degeneration of a kidney, if alone affected; and it has been proved, that tuberculosis of one kidney is apt to

be followed sooner or later by the same disease in the other. The true value of the operation can only be estimated when we have a record of the subsequent health of the patients, and time, cause, and manner of death.

The relative value and safety of the abdominal and lumbar methods of operating, cannot be ascertained from their respective results, as shown in the table. Theoretically, the lumbar incision ought to be the safer, but much will depend upon the character of the case to be operated upon, and practicability often decides the question in favour of the abdominal incision. Where the kidney is but slightly enlarged, the costo-iliac space sufficient, and the gland moderately adherent, there can be no question that the lumbar method is safer and preferable; but in a large proportion of cases the abdominal section is the easier and safer of the two, by reason of the size and character of the tumour, and the difficulties to be overcome in ligating its bloodvessels. Believing that the post-peritoneal method is only theoretically safer, Dr. Knowsley Thornton, after the direction of Langenbuch, advocates the abdominal incision in almost all cases; making his opening in the *linea semilunaris*, on the side corresponding to the kidney to be removed. He believes that this method is the truly scientific one for nephrectomies in general, and offers great advantages in ligating the bloodvessels and turning out the diseased kidney, thus avoiding the dangers of hemorrhage.

The causes of death may be enumerated as follows, viz.:—

Peritonitis	8	Secondary do.	1	Collapse	4
Septic peritonitis	4	Uræmia	6	Exhaustion	2
Septicæmia	1	Pulmonary embolus	2	Excessive vomiting	2
Pyæmia	2	Shock	7	Not stated	3
Hemorrhage	3				

Special Cases.—No. 7 was the first operation, in my tabular record, in which a diseased kidney was removed, under a correct diagnosis, and with a favourable result. The woman had been long suffering with a painful floating kidney, and an attempt had been made by another operator to excite adhesive inflammation by means of a seton, and thus fix the kidney in contact with the abdominal wall. But the tape cut its way out of the kidney, leaving a cicatrix two inches long, and set it once more at liberty. This case was also one of two, in which the operation was undertaken during pregnancy, and without exciting abortion. In the other case (42) abortion followed in twelve hours.

Cases 13, 16, and 22 were all instances of protrusion of the kidney through incised wounds of the loin; in an Austrian, an Algerine woman, and a Chinaman. From the repetition of this peculiar injury within quite a limited period, we are led to infer that such wounds have not been uncommon in past ages. From the report of the case of the Chinaman we may also infer, that such injuries were capable of spontaneous cure, the vessels of the kidney being closed by the cicatrization of the lumbar wound, and the pedicle cut off by strangulation and death.

Case 64 presented the rare complication of two fistulæ, a primary one in the loin, and a secondary one in the groin, on the left side. Pain in the corresponding kidney had existed twelve years at intervals, or from the age of 8. The lumbar sinus formed four years before the operation, and gave exit to a calculus four months later; and a week before the operation a second abscess pointed in the groin, was opened, and established a second fistula, giving exit to pus and urine. The excretory function of the kidney continuing in activity, the offensive state of the woman can well be imagined, and the immediate relief appreciated. The measure of urine voided by the urethra soon doubled.

Case 90 is unique in the history of nephrectomies; as a large cyst involving the lower part of the kidney and pendent from it was found to contain blood, the origin of which could not be accounted for, as there was no aneurism or open vessel.

From the record of cases given, and their numerous mishaps, it is evident that the operation of nephrectomy is still upon trial, both as to the best method of performance, and the diseased conditions indicating the excision. With regard to some of the diseases of the kidney, we may say without hesitation, that the operation is demanded, and promises well, both as to the prospect of recovery, and the permanence of relief obtained. But there are other conditions, in which operations have been performed, under circumstances of very doubtful utility. We are not prepared by evidence of final results, to recommend the operation in cases of renal sarcoma of children, where at best the temporary relief is but a poor return for the risk, suffering, and perhaps parental anxiety in the case. The same opinion in a modified form will hold good with regard to tuberculosis, which if primary in one kidney, is not likely to remain long confined to it, or to be eradicated by its removal. Of four cases, two recovered, and one of these survived four months; the fate of the last one, a girl of seven years of age, will be of some interest. She was operated upon fifteen months ago. In cancerous and scrofulous subjects there is but little hope of being able to prolong life beyond a limited period. In hydronephrosis; pyonephrosis; calculous pyelitis, with or without fistula; and painful floating kidney, there may be entertained strong hopes of final success.

In my tabular record I have added 27 cases, to that of Prof. Czerny, prepared ten months ago; his last operation bearing the date of July 25, 1881. As this in my record is case 84, he was eleven short of the full list, and I presume I must be fully that now. I have also added 22 to the record of Mariotti, whose paper appeared in *Lo Sperimentale* of February and March, 1881. When Credé published his own operation, he numbered it the 42d; but it will now be seen that it was, at the lowest, the 56th. For these reasons I have not given my record as "*the first hundred*," as this will not be reliably ascertained for a year yet.

329 S. 12TH STREET, May 25th, 1882.

Article XI.

Value of Cardio-sphygmography for the Determination of Cardiac Valvular Conditions and of Aneurism, Particularly for Examiners in Life Insurance. By A. B. Isham, M.D., of Cincinnati, Ohio.

The graphic method in diseases of the circulatory apparatus has, within the past few years, made such positive additions to our means of arriving at certain conclusions in regard to valvular affections of the heart and calibre changes in the principal arterial vessels, that no physician, who has to deal with such conditions, should content himself to rest in ignorance of the method and its results. It is of particular importance that examiners in life insurance should know what cardio-sphygmography has accomplished, and should be competent to avail themselves of the advantages which it offers in clearing up doubtful cardiac physical signs. They occupy a position of peculiar responsibility, both toward the company by which they are engaged and toward the general public. It is their duty to the former to recommend only clean risks, about which there hangs nothing to stand in relation to a future fatal disease. Therefore, in a person presenting with cardiac murmur, they cannot upon physical signs, and objective signs, and applicant's history, predicate a positive opinion that an existing murmur is purely functional without significance as regards the structural integrity of the organ, and it is manifestly obligatory upon them to class the risk as doubtful. In doing this, while the company may be deprived of some good risks, compensation is probably more than established by a preponderance of what might have proved bad risks. It might seem here that the balance is in favour of the company, and the obligation toward it fulfilled; but the balance is not in favour of the company, and the obligation is not fulfilled if there exists any possible way of separating the good from the bad. On the other hand, duty to the public demands that none who come within the limits of application physically sound, desiring the benefits of life insurance, should be excluded. If, then, a perfectly healthy applicant is rejected by reason of a sound, pertaining simply to some mechanical factor, standing in no sort of relation to a pathological process, but which appertaining to another individual would be indicative of grave alterations of vital structures, he suffers an injustice for which the medical examiner is not blameless if there be any way of discriminating as to the nature of the murmur in the one case or the other. The applicant and his assigns are injured in that they are deprived of the benefits which life insurance, in its various forms, affords, and to which they should be entitled.

It is the object of this paper to present in a plain practical light what assistance cardio-sphygmography has proved capable of rendering toward the elucidation of the dubious elements in the order of occurrences we have

referred to. By the term *cardio-sphygmography*, of course is meant the simultaneous tracing of the heart and some one of the arteries, one trace above the other, upon the same receiving slide or tablet, together with a time trace below, in seconds or fractions, so that differences in time between the two traces may be easily and accurately computed. The difference in time between the contraction of the ventricles of the heart and the impulse in an artery—or the time difference between two portions of the same artery, or an arterial trunk and one of its branches—forms the basis upon which the deductions from sphygmographic tracings are principally made. Hence it may be seen that instruments which are capable of registering only a single trace, and have no chronographic attachment, have little clinical or physiological value. To be able to draw correct inferences respecting the double registry in any particular case, we must know what are the normal time differences between the heart and the various arteries which permit of investigation. These have been very closely determined by Dr. A. T. Keyt, by means of his compound sphygmograph, as follows: with a heart beating at the rate of 72 pulsations per minute.

The average time difference between the contraction of the ventricle and the pulsation in the carotid artery is about .0833 of a second = to $\frac{1}{12}$ of a second.

The average time difference between the heart and the temporal artery in front of the external auditory meatus is about .100 second, or $\frac{1}{10}$ second.

Between the heart and the subclavian artery, above the clavicle, about .077 second = to $\frac{1}{13}$ second.

Between the heart and the radial artery about .1538 second = to $\frac{1}{6}.5$ second.

Between the heart and the femoral artery about .1428 = to $\frac{1}{7}$ second.

Between the heart and the dorsalis pedis artery about .216 = to $\frac{1}{5}$ second.

The cardio-carotid time difference is approximately one-tenth the duration of the pulsation. Thus, if the pulse-rate is 60 per minute, the pulsation is one second long, and the normal time difference would be $\frac{1}{10}$ of a second; if the pulse-rate is 72, the pulsation has a duration of $\frac{60}{72}$ = to $\frac{5}{6}$ of a second, and the normal time-difference between the heart and carotid artery would be $\frac{1}{10}$ of $\frac{5}{6}$, which equals $\frac{1}{12}$ of a second. This ratio of difference to duration of pulsation holds between 60 and 120 beats per minute, but beyond these limits there is no certainty that it obtains.

The carotid artery is commonly selected in making comparisons of time difference, because it is nearest the heart of any artery readily accessible for observation, and in points involving the integrity of the central organ, or the ascending or transverse portions of the aorta, it must necessarily furnish the least equivocal sphygmographic data.

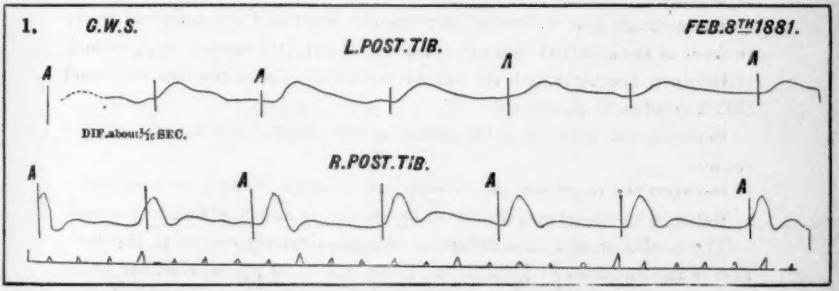
Variations in the normal time interval are produced by aneurism, heavy aortic valves, aortic regurgitation, mitral regurgitation, and rigid arteries.

INCREASING TIME-INTERVAL.	DECREASING TIME-INTERVAL.
Aneurism.	Aortic regurgitation.
Heavy aortic valves.	Rigid arteries.
Mitral regurgitation.	

INCREASING THE CARDIO-ARTERIAL TIME-DIFFERENCE OR INTERVAL. *Aneurism.*—It has been demonstrated by M. Francois Franck[1] and Dr. Keyt[2] that aneurism retards the transmission of the arterial wave between the heart and the vessels beyond the aneurism, which receive their blood-supply through it. However, according to the clinical observations of Dr. Keyt,[3] aneurism, to cause pulse delay, must have "free communications, large cavity, and yielding walls," while one with converse characteristics, "narrow orifice or small cavity, or resisting walls, may show no abnormal retardation. Deformation of the pulse has no value in the sphygmographic consideration of aneurism, indicating only "arterial obstruction which may originate from other conditions as well as aneurism."

Fig. 1 supplies the tracings in a case of aneurism of left popliteal artery, showing the delay typical of the aneurismal condition.

Fig. 1.



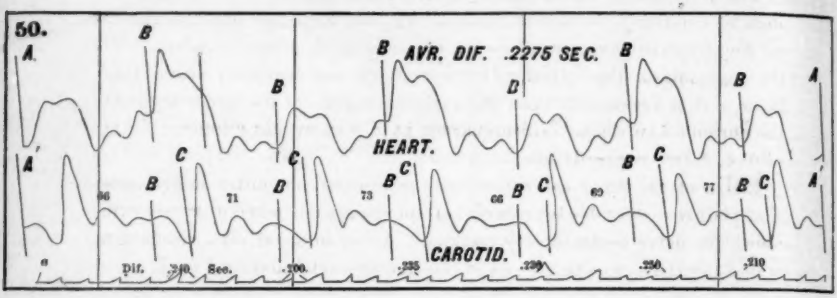
Time-difference between posterior tibials about $\frac{1}{10}$ second. Normally there should be no difference in time.

Heavy Aortic Valves.—That heavy aortic valves induce abnormal pulse delay has been shown by Dr. Keyt.[4] The influence of these factors upon the time-difference is well shown by the accompanying graphic delineation, Fig. 2, together with the more salient post-mortem features of the case from which it was obtained.

I made the *post-mortem* examination, assisted by Drs. Keyt and Lowry, April 9, 1881. Left ventricle hypertrophied, left auricle normal, right auricle and ventricle dilated and hypertrophied; mitral, tricuspid, and pulmonary valve normal. Aortic valves had deposited upon their upper

[1] Journal de l'Anat. de la Physiol., t. xv. (Mars–April, 1879).
[2] Boston Med. and Surg. Journal, Sept. 30, 1880.
[3] N. Y. Med. Record, Nov. 29, 1879.
[4] Med. Record, June 4, 1881.

Fig. 2.

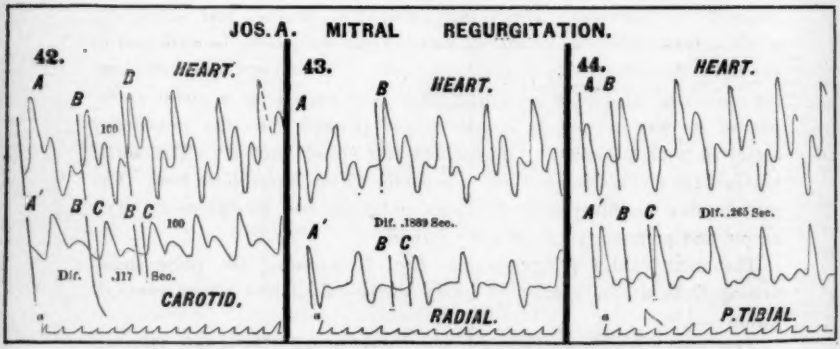


Average time-difference in Fig. 2, .2275 second = to $\frac{1}{4}$ second. Normal time-difference $\frac{1}{12}$ second.

surfaces enormous masses of rough calcareous matter. The overlapping borders of two segments, in nearly half their extent were united, forming a rigid septum, and leaving a triangular space into which fitted the third segment. This segment was pliable, and though it contained a calcareous deposit, measuring three-eighths of an inch in its thickest part, it performed the office of opening and closing the orifice, and did not permit of regurgitation. When closed, the segment overlapped by a little the rigid border of the opening, but slight pressure would cause it to sink below the rim, where it remained, as if locked, until commensurate pressure was applied in the opposite direction.

Mitral Regurgitation.—The cardio-sphygmographic researches of Dr. Keyt[1] have revealed a notable pulse delay from mitral regurgitation. Fig. 3 is in illustration.

Fig. 3.



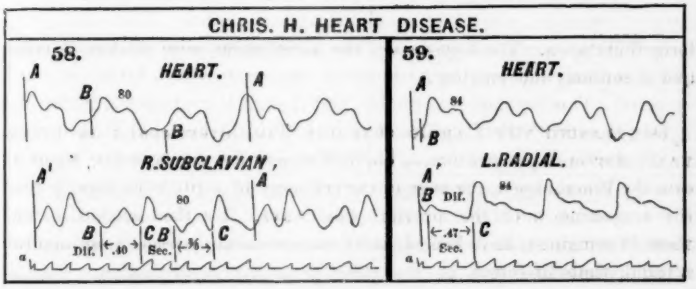
Cardio-carotid time-difference .117 second or between the $\frac{1}{8}$ and $\frac{1}{9}$ second. The normal time-difference with pulse at 100, as in this case, should be $\frac{1}{17}$ second.

[1] Cin. Lancet and Clinic, March 29, and April 19, 1879, and N. Y. Med. Record, Feb. 14, 1880.

The *post-mortem* examination of the subject furnishing the above tracings, as conducted by myself, assisted by Drs. Keyt and Mecum, showed cardiac hypertrophy, normal aortic, tricuspid, and pulmonic valves, while the segments of the mitral valves were thick and leathery, with a thick layer of firm vegetations upon the auricular surface of the larger segment; the auriculo-ventricular orifice guarded by this valve was dilated, and permitted of free regurgitation.

Either of the three agencies already mentioned, operating singly, occasion plainly discernible retardation of the pulse, but when they are combined the delay becomes very marked. An example of all three factors, acting together, may be viewed in the tracings exhibited by Fig. 4.

Fig. 4.



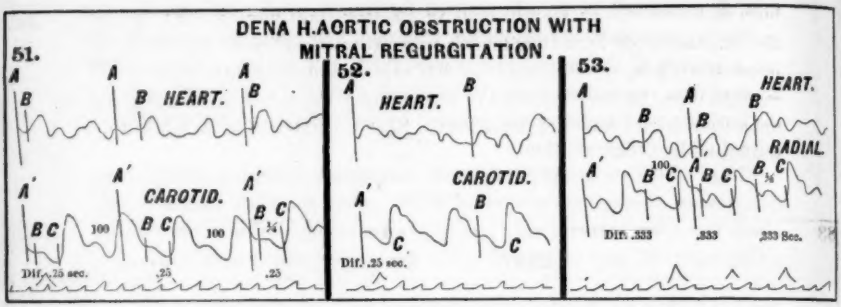
Cardio-subclavian time-difference, .40 = $\frac{2}{5}$ sec. Normal time-difference $\frac{1}{13}$ sec.

The subject from whom these tracings were obtained died November 16, 1879. From the post-mortem notes at the Cincinnati Hospital was gleaned the following: Heart fatty, weight 15 ounces; just above the aortic valves were two aneurismal pouches, one projecting forward and to the right, the other forward and to the left. The first contained no clots, the other was filled with laminated fibrin, was the size of a small apple, pushed its way in various directions, and pressed upon the pulmonary artery in such a manner as to occlude this vessel entirely. The aortic valves were much *thickened*, but competent by the hydrostatic test. The mitral valve was filled with nodular vegetations and incompetent. Tricuspid and pulmonary valves were normal.

The next cardio-sphygmograms, Fig. 5, instance the pulse delay arising from a combination of heavy aortic valves and mitral regurgitation:—

The person supplying tracings Fig. 5 died in the Cincinnati Hospital February 23, 1879. The autopsy showed the aortic valves to be the seat of extraordinary vegetations, not permitting regurgitation, but so heavy as to require material augmentation of the ventricular pressure to

Fig. 5.

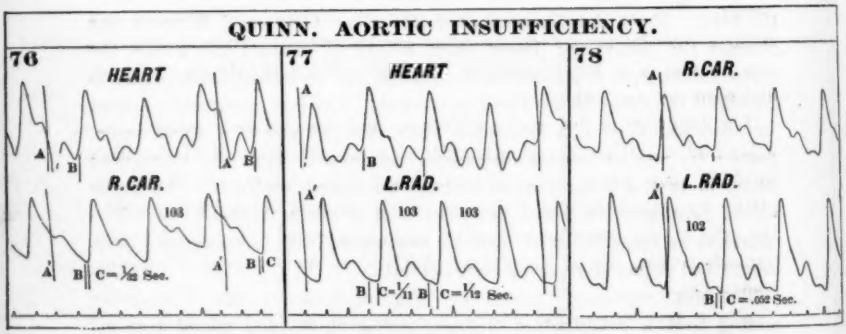


Cardio-carotid time-difference, .25 = ¼ sec. Normal time-difference $\frac{1}{12}$ sec.

force them open. The segments of the mitral valve were thickened, rigid, and manifestly incompetent.

DECREASING THE CARDIO-ARTERIAL TIME-DIFFERENCE OR INTERVAL. *Aortic Regurgitation.*—To M. Francois Franck[1] and Dr. Keyt[2] we owe the knowledge we possess of the influence of aortic insufficiency upon the transmission of the arterial pulse wave. By the graphic method these investigators have been enabled to ascertain a decrease in the cardio-arterial time-difference as the effect of aortic regurgitation. Cardio-sphygmograms, Fig. 6, are illustrative.

Fig. 6.



Cardio-carotid time-difference $\frac{1}{12}$ sec. Normal time-difference at 103 about $\frac{1}{17}$ sec.

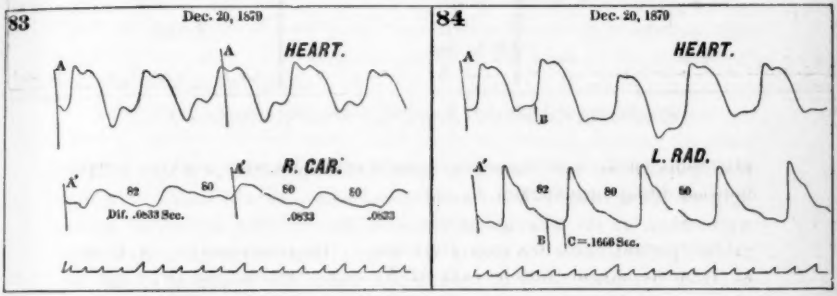
The case from which were derived the above tracings was in the Cincinnati Hospital, service of Dr. C. G. Comegys. All the usual physical

[1] Op. cit.

[2] Op. cit.

signs of free aortic regurgitation were present. As yet no opportunity has been met with to verify pure aortic insufficiency post-mortem. But where the demonstration is so complete that aneurism of sufficient degree causes pulse delay, graphic tracings in which this condition figures with aortic regurgitation, become available in determining the influence of the latter upon the arterial wave transmissions. Such a combination is marked by tracings Fig. 7 :—

Fig. 7.



Cardio-carotid time-difference .0833 = $\frac{1}{12}$ sec. Normal time-difference .0833 = $\frac{1}{12}$ sec.

Tracings Fig. 7 are from a man who had been under the professional care of both Dr. Keyt and myself, in whom we found, post-mortem, the left ventricle hypertrophied, the mitral valves slightly thickened toward the base, but competent; aortic orifice enlarged and aortic valves thickened, corrugated, and calcified throughout, and evidently wholly incompetent. The ascending aorta was greatly dilated, atheromatous, and studded with calcareous matter, while the transverse portion of the arch was the seat of a large aneurism fully three inches in internal diameter, and with soft and flabby walls.

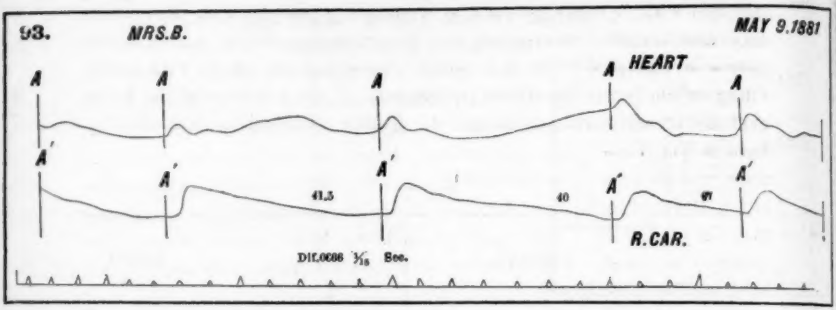
The aneurism in this case was such as must have caused notable pulse delay had it not been counterbalanced by the precipitation of the pulse incident upon aortic regurgitation. The precipitation, Dr. Keyt[1] explains, by presuming that "the base of the arterial column rests against the sides of the ventricle instead of against the aortic valves, and is advanced, causing rise of the pulse with the first movement of ventricular contraction."

Rigid Arteries.—Rigid arterial vessels, such as are met with in the aged, increase the rate of pulse transmission, as may be seen by tracings Fig. 8 :—

Tracings Fig. 8 were from Mrs. B., æt. 78. She suffered from dyspnœa, cough, dropsy, and debility, and had an irregular, and, at times, slow pulse. There was a systolic murmur distinct over the cardiac area,

[1] Boston Med. and Surg. Journal, Sept. 30, 1880.

Fig. 8.



Cardio-carotid time difference about $\frac{1}{15}$ sec. Normal time-difference $\frac{1}{12}$ sec.

plainly heard at both base and apex, but emphasized at a spot midway between these sites. The second sound was pure and clear. Tracings were taken at the Cincinnati Hospital May 9, 1881, where she was a private patient under the care of Dr. Keyt. Death occurred at Newtown, O., from dysentery, July 9, 1881, while under the treatment of another physician. I performed the post-mortem July 11, 1881, in the presence of Drs. Keyt and Witham and medical student Jones. The heart was fatty. There were calcareous and fatty alterations of arterial walls. The aorta was of normal size, and its orifice was uncontracted. The aortic valves were competent, but two segments presented rough calcareous nodules upon their upper aspect. A prominent nodule projected from the ventricular surface of one segment near its attached border. One segment was free from calcareous matter, but was slightly expanded and thickened. The valves were perfectly pliable and competent by the hydrostatic test. The mitral and tricuspid valves were slightly thickened, but competent, as were also the pulmonic valves.

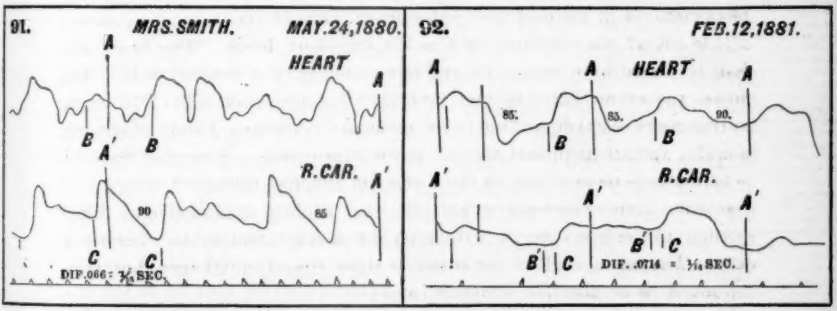
In the above case the cardiac second sound was perfectly clear, and there was a systolic murmur with greatest intensity midway between the base and apex. The absence of all indications of aortic regurgitation led to the decision of pulse precipitation from rigid arteries, and the absence of marked evidences of cardiac hypertrophy gave warrant to the conclusion that even in the right heart there could be no material disturbance of valvular action. The precipitation in the case is really much greater than the figures show, since, with a pulse at even 60 per minute, the normal delay is greater than that which we have given for a pulse of 72 per minute. We will have occasion to revert again to these tracings in the course of this article.

Having considered the conditions which may affect the rate of pulse transmission, a few words may be devoted to the cardio-sphygmographic indications in aortic and mitral stenosis. Aortic stenosis does not alter

the transmission rate of the pulse. A marked degree of stenosis deforms the pulse trace, producing one with sloping ascent and rounded top. It may also occasion intermittency. It all depends, however, upon the degree of narrowing. If the orifice is sufficient to permit of pretty free filling of the aorta by the ventricular contraction, the sphygmographic evidence of aortic stenosis is nil. In regard to mitral stenosis, no cases have as yet come under observation. From the markings of aortic stenosis, and deductions drawn from the course and mechanism of the circulation, it would make no variation in the pulse-rate transmission, but would give rise to a pulse of small tension, and one which might present intermittency at times. The auricular portion of the trace would undoubtedly have unusual prominence.

Affections of the valves and orifices of the right heart, of course, only have a negative bearing upon cardio-sphygmography, because the blood current which traverses them does not pass into channels accessible for investigation. The negative value of the sphygmograph in right heart complications is well exhibited by tracings Fig. 9.

Fig. 9.



Cardio-carotid time-difference about $\frac{1}{15}$ sec. Normal time-difference with pulse at 90 about $\frac{1}{15}$ sec.

Tracings (Fig. 9) were from Mrs. Smith, æt. 59. Her symptons were shortness of breath, inability to exercise, some cough, anasarca of the lower extremities, ascites, and intermittent pulse. The area of cardiac dullness was much increased, showing decided cardiac hypertrophy. There was a loud diffused systolic murmur, plainly accentuated at the apex, and in all respects, apparently, a typical example of a mitral regurgitant murmur. The second sound was clear and intensified at the pulmonic site. Tracings were taken in May, 1880, and February 12, 1881. Death occurred May 7, 1881. At the post-mortem, Dr. Keyt being present, we discovered the heart generally enlarged, walls of right auricle and ventricle greatly thickened and the great veins dilated. Pulmonic valves normal; right auriculo-ventricular orifice dilated, and tricuspid valves wholly in-

competent, one segment being firmly bound down by adhesions to the side of the ventricle. Aortic valves normal; mitral valves slightly thickened, but competent. Texture of heart fatty and friable.

In the absence of all indications of aortic regurgitation, it was concluded that, in this case, the left heart was properly functionating, and that the lesion must be located in the right heart, where it would not affect the cardio-arterial tracings.

The negative evidence the sphygmograph furnishes of perfect valvular mechanism in the left heart finds good illustration in tracings Fig. 8, together with the data and observations thereto pertaining. The negative evidence supplied by the compound sphygmograph is not less valuable than its positive evidence, and it becomes positive evidence taken in connection with clinical symptoms and physical and objective signs.

From what has preceded, though it has been presented rather in the form of an easy lesson in cardio-sphygmography, it is thought that enough proof has been advanced to establish the graphic method as an important adjunct in differentiating some of the complex instrumentalities which induce disorders in the course of the circulation, and alterations in normal cardiac and arterial sounds. Assuming that this much will be admitted, its advantages in life insurance examinations are great.

It is one of the prerequisites to a life insurance policy that the holder shall be a healthy person. Individuals come up for examination presumably as those who regard themselves perfectly sound, or, at least, presenting no traces of disease detectable to the medical examiner. The examination is made, and an abnormal cardiac murmur is heard. Neither symptoms or appearance or anything in the history of the applicant show disqualifying lesion,—there is nothing but this little whiffing sound, bearing some relation to the heart beats. Without the graphic method the examiner cannot determine whether the sound be structural or functional. Provided the sound be constant, its character and location go for nothing in the differentiation. The risk cannot be given a clean recommendation. The examiner may say that he *believes* the murmur to be functional, and the risk a good one, but he cannot state that he has any warrant for this opinion beyond the appearance and history of the applicant, and the probabilities are that if a medical examiner mentions a heart murmur, the medical director will reject the risk no matter how strongly the former expresses his confidence in a sound of functional character. On the other hand, an examiner, by the aid of the graphic method, conjoined with other means of investigation, may base his opinion upon the functional or structural significance of a murmur with almost as much certainty as upon a mathematical demonstration. If the normal pulse delay obtains between the heart and carotids, and radials and dorsal arteries of the feet, he may say that an instrument of precision gives unequivocal evidence of simple functional or mechanical origin of the murmur. But before he is entitled

to make so confident an announcement, he must have ascertained that there is no aneurism and aortic regurgitation to counterbalance each other in their influence upon pulse transmission, and that there are no valvular lesions of the right heart. This he may do by an entire absence of the clinical symptoms and physical signs indicative of these troubles. Then, too, if the cardio-sphygmograph reveal abnormal pulse delay or pulse precipitation, or pulse deformation or marked prominence of the auricular portion of the trace, the examiner may say that the instrument of precision, in connection with the other features in the case, writes a record of aneurism, or mitral regurgitation, or aortic regurgitation, or aortic or mitral stenosis, as the condition may be. Can an examiner without the assistance of a compound sphygmograph arrive at a conclusion with equal certainty? Without exception, where autopsies have been obtained, the conditions of the circulatory organs have corroborated the deductions derived from a study of the cardio-sphygmographic tracing during life.

Every competent physician of considerable experience knows how fallacious many cases of heart murmurs prove themselves. He finds murmurs in some instances in which he is apprehensive of grave cardiac mischief and discovers that they have disappeared, after a time, without any apparent harm surviving them. On the contrary, instances are unfortunately not wanting of supposed innocent murmurs becoming the heralders of serious cardiac disease. It is the uncertainty which even the most accomplished clinician must feel in regard to many cases presenting cardiac murmurs that makes insurance companies so chary about accepting risks in which there may be possible danger from this source. We think that, with the progress already made in cardio-sphygmography, it is perfectly practicable to distinguish the acceptable from the non-acceptable risks in almost every instance of persons coming under examination with heart murmurs. This method of investigation is new, its data, as yet, comparatively limited, but it promises to be developed until nearly every point in cardio-vascular pathology finds its interpretation by this means.

WALNUT HILLS, CINCINNATI, O.

ARTICLE XII.

A REPORT OF THREE HUMAN MONSTROSITIES.

By M. A. KOOGLER, M.D., of De Graff, Ohio.

OF late the village of De Graff, Ohio, gave record to three monstrosities: one cyclops and two acrania, in less than two months.

The first occurred in Dr. D. W. Richardson's practice, the second in that of Dr. F. M. Galer's, and the third in the writer's practice.

CASE 1. *Cyclopian Monster.*—Dr. D. W. Richardson was called, on the evening of Dec. 7, 1881, to attend Mrs. D., a multipara, in labour, but did not reach the patient until the child was born. According to the father's statement the child lived ten or fifteen minutes after birth. On inquiry, the doctor could not find anything abnormal in the labour, only an excessive amount of the liquor amnii.

The next morning he came in possession of the child; and brought it to my office for examination.

It was a female, born at term, weighed four pounds, and body well developed. It had but one eye, of normal size, situated in the middle of its face, and a little above where the mouth should have been.

The nose consisted of a mere conical fleshy semi-tube, starting out by its smaller end, immediately above the eye; its dimensions being a little over an inch in length, and about half an inch in diameter at its free extremity. It contained no cartilage, and, instead of two anterior nares, there was but one small, round opening, or canal, about one-fourth of an inch in depth. It was quite soft and flexible, and hung loosely over the eye.

The maxillary bones were united, and no line between them could be determined. The mouth consisted of a small aperture, and situated under a small fold of skin, immediately beneath the symphysis of the inferior maxillary bone. A probe could be passed through this small opening into the throat.

The ears were of normal size, but situated much lower, and approaching each other.

There were apparently no external auditory canals, but, instead, there were two small depressions.

Fig. 1.

Cyclopian monster. Head flexed.

Fig. 2.

Cyclopian monster. Head extended.

The ears were symmetrical, and the lobes and the cartilages below the tragi and anti-tragi were absent, and in their place, running inwards and approaching one another, were two slit-like openings, about one-third of an inch in length. These openings communicated with the larynx, and a

probe could be passed in the one and out of the other. The father stated that during the time it lived, "its breathing was through these openings." The appearances of the monster are well shown in the accompanying drawings (Figs. 1 and 2).

CASE II. *Acranial Monster.*—Dr. F. M. Galer was called, on the evening of Dec. 9, 1881, to visit Mrs. E., a multipara, who was in labour at term. After the os became thoroughly dilated, a digital examination revealed nothing, and it was thought to be a breech-presentation.

The membranes were ruptured, and two peculiar eminences were felt, but the exact condition could not be determined until the head presented externally, when an acrania monster was discovered.

Duration of labour eleven hours. The child was born alive, female, weighed six pounds, and lived a short time. *Post-mortem* examination twelve hours after birth. The body and extremities were well developed, with the exception of the thumbs being a little too long, and two of the fingers, on the left hand, being drawn down into the palm.

The head of the child was badly deformed, or, more properly, deficient. The bones of the cranium, that were present, were the orbital and nasal portions of the frontal, mastoid, and petrous portions of the temporal, ethmoid, sphenoid, and the basilar portions of the occipital.

The cranial bones were, therefore, absent down to the base, and the space was covered with a membrane, having the appearance of the dura mater, running into the hairy scalp on its borders.

Anteriorly were two glandular-like eminences, about the size of an almond. Beneath the membrane was a small quantity of fluid.

The cervical vertebræ were wanting, and the first dorsal articulated with the cranium.

Nothing could be found corresponding to the medulla oblongata. The most noticeable feature in the case, independent of the malformation of the child, was the abnormal amount of the liquor amnii.

The face had an idiotic expression, the upper eyelids very prominent, mouth large, lips thick, and nose flat. The ears were of normal size, and the helices drawn forward, giving them a drooping-like expression.

CASE III. *Acranial Monster.*—I was called, on the morning of Jan. 26, 1882, to visit Mrs. G., a multipara, who was supposed to be in labour at ten months.

On examination *per vaginam*, I found the os well dilated, and the membranes protruding, but the presenting part was too high to be within reach, and I consequently thought it to be a breech presentation. I was unable, by abdominal examination, to diagnose the position of the child. I ruptured the membranes, and the waters escaped with a rush, and in thrice the quantity I had ever seen on any previous occasion.

After the waters had escaped, the presentation was still too high to be determined with any certainty, and I was uncertain as to what part was presenting, until I introduced my hand into the uterus, and found it to be a deformed head.

The child was born in first position about one hour after the membranes were ruptured. The child was born alive and made a few movements, when it died of asphyxia.

It was a female, weighed five and one-half pounds, body and extremities well developed, and the deformity of its head parallel to the preceding case.

The whole of the forehead, summit, and, as nearly as could be determined, the greater portion of the occipital bone were wanting. The only

substance, that could be detected to resemble brain-tissue, were two masses, not so large as almonds, situated anteriorly and immediately above the orbits.

The base of the brain was covered by membranes externally resembling the dura mater, and ran into the hairy scalp. Beneath the membranes was a small quantity of fluid not exceeding one ounce. Its face presented an idiotic look, the mouth wide, lips thick, and separated; nose very flat, and upper eyelids protuberant. The neck was short, and as far as could be determined the cervical vertebræ were wanting. The ears were of normal size, and the alæ were rolled upon themselves. No *post-mortem* examination was permitted.

There was an abnormal amount of liquor amnii in each one of these cases.

ARTICLE XIII.

DISSECTION OF A HUMAN OTOCEPHALIC CYCLOPS MONSTROSITY.

By ROBT. MEADE SMITH, M.D., Demonstrator of Physiology, and ANDREW J. PARKER, M.D., Professor of Zoology in the University of Pennsylvania.

AT the request of the Mütter Museum Committee of the College of Physicians of Philadelphia, who obtained possession of the specimen, we were able to dissect the Cyclops monster, described as Case I. in the preceding article.

We find it necessary to make very few additions to the description there given of the external appearances, though dissection enabled us to correct several errors which were unavoidable with the exterior alone for a guide. We find that the monster belongs to the group of *otocephala* of St. Hilaire, and to the division of this group which he calls *edocephala*, characterized by the tendency to fusion of the external auditory apparatus beneath the head, the rudimentary condition of the lower jaw, absence of mouth, and presence of a rudimentary nasal apparatus, in the form of a proboscis, above a single eye placed in the centre of the face.

The specimen referred to us for description was that of a female fœtus, probably, from the undeveloped condition of the larynx and finger-nails, in the eighth month of gestation. The only abnormality was in the development of the head, and our description, therefore, will be confined to that region:—

The general shape of the cranium is normal, with the frontal region at first sight apparently well developed, no suture being perceptible between the frontal bones. The frontal protuberances are represented by two marked prominences at the line of union of the frontal and parietal bones; although, therefore, really malformed, the general appearance of the frontal region is that of a normal skull. The circumference of the head over the frontal protuberances is 26.3 centimetres. The occipital and parietal prominences are

well developed, and the occipital and frontal fontanelles occupy their normal positions; the latter, however, being triangular in shape, with the base anterior, instead of quadrangular. Situated 4 cm. behind the frontal fontanelle, and 1 cm. in front of the occipital fontanelle, in the line of the sagittal suture, there is an oval defect in development of the parietal bones, 2 cm. in diameter laterally, and 15 mm. in antero-posterior diameter.

Situated immediately below a quasi glabellum, 15.1 centimetres from the occipital prominence, there is a fleshy, flexible, trumpet-shaped proboscis, 2 centimetres in length, 1 centimetre in diameter at its free end, and 5 millimetres in diameter at its point of attachment. It is covered throughout with integument, continuous with that of the frontal region, which, at its free extremity, is involuted to form a single blind pouch 3 millimetres in depth and in diameter.

Immediately below this rudimentary nasal apparatus, and overhung by it, is situated a single eye, placed in the median line, in a bony orbit of nearly circular outline, the diameter of the palpebral fissure being 16 millimetres. The upper and lower eyelids are feebly developed, and meet at each side in a shallow groove or furrow, extending outwardly 3 millimetres; the upper lid is circular in outline at its margin, and freely separated from the eyeball to the depth of 3 millimetres; eyelashes are well marked, and, although the frontal region is covered with faint downy hair, there is no indication of an eyebrow. The lower eyelid has a crescentic emargination in the median line, where it is attached to the eyeball, the remainder of the lid being free from the eyeball to the depth of 3 millimetres, as in the case of the upper lid. From the feeble development of the eyelids the eyeball is left considerably exposed.

Below the single orbit the superior maxillary bones are easily detected; they are narrow and more flattened laterally than is normal. Below the inferior margin of the superior maxillary bone there is a second fleshy prominence, closely resembling in general outline a normal chin; no signs of an inferior maxillary bone can, however, be detected. At the summit of this tuberosity, which is about 3 centimetres in diameter, and 2 centimetres in height, there is situated a circular opening, 3 millimetres in diameter, communicating with a blind pouch 23 mm. in depth, and of the same apparent breadth.

The neck is somewhat flattened antero-posteriorly. On its upper portion, displaced below the base of the skull towards the median line, are the external auricles, the external auditory meati being represented by two slit-like openings, 23 millimetres apart, occupying their normal relations to the auricles, inclined downward and toward the median line. A probe can be readily passed through these openings into the pharynx. The helix and anti-helix are moderately well-marked, and the anti-tragus and lobe of both ears are present; the tragus is not discernible.

On removing the calvaria it was found that the brain did not completely fill the cranial cavity. The cerebrum was found incompletely divided into two hemispheres, anteriorly no separation having taken place; posteriorly, however, the cerebral sac diverging into two lateral masses. The frontal lobes of the hemispheres were represented by a single mass, containing the conjoined lateral ventricles; the temporal lobes were normally developed as regards their form and position, and separated from the common frontal lobe by a distinct fissure of Sylvius; the posterior lobes were absent, there being no posterior horn of the lateral ventricle. The posterior divergence

of the cerebral sac completely exposed the thalamencephalon, mesencephalon, and cerebellum.

The dura mater and pia mater were tightly adherent to the surface of the cerebrum; the cerebral falx was absent, unless it be represented by the two diverging folds of dura mater, which enveloped the diverging lateral cerebral masses. The tentorium was represented by two crescentic folds, extending out a short distance from the petrous ridge. The longitudinal sinus was, of course, entirely absent; there existed, however, two venous channels originating at the point of divergence of the cerebral lobes, whilst posteriorly they followed the divergence of the lobes to empty into the lateral sinus at the position of the jugular foramen, instead of at the normal position opposite the internal occipital prominence.

The dura mater was firmly attached at a point corresponding to the crista galli, which was, however, not developed.

The pia mater followed the dura mater, and the velum was represented by a distinct fold, which did not, however, extend into the lateral ventricles.

With the exception of the fissure of Sylvius, there were no signs of fissures or convolutions, the surface of the cerebral sacs remaining entirely smooth; the cerebellum, however, exhibited faintly marked transverse fissures.

From the disorganized condition of the brain we were unable to determine completely the structure and relative position of many of its parts, but we present the following as perhaps of interest: The lateral ventricles were represented by a single cavity, of a horse-shoe shape, its limbs passing backwards into the diverging cerebral sacs; the septum lucidum, fifth ventricle, fornix, and corpus callosum were entirely absent. No corpora striata were observed, though, from the disorganized condition of the brain, it is possible that they escaped identification. The conjoined lateral ventricle communicated by a large opening, twelve millimetres in diameter, representing the foramen of Monro, with the third ventricle. The optic thalami, pineal body, and infundibulum were present, but no trace of the pituitary body was found. The mesencephalon was normally developed, the Sylvian aqueduct passing from the third to the fourth ventricle, having above it the quadrigeminal bodies and valve, and below the cerebral peduncles. Nothing abnormal was noted in connection with the cerebellum, medulla, pons, or fourth ventricle.

On removing the brain from the cranial cavity, it was found that the olfactory lobes were absent, as were also the optic tract and chiasm; the latter being represented in the cranial cavity by a single nerve, which passed through a single optic foramen. The remaining cranial nerves appeared to be normal.

A few observations were made upon the muscles of the face and head. The occipito-frontalis was well developed; the auricular muscles were normal. Rudimentary fibres were found arising from the temporal fossa, great wing, and pterygoid process of the sphenoid and from the zygomatic arch, representing from their origin and direction the temporal, masseter, and pterygoid muscles; from the absence of the lower jaw they were naturally not normally developed. The fatty cheek-pad was well formed, but was situated upon the squamous portion of the temporal bone. An orbicularis palpebrarum encircled the single eye. With regard to the remaining facial muscles, nothing definite could be determined.

The blind pouch, situated below the superior maxillary bones, described

above as communicating with the exterior by a small rounded aperture, proved to be a rudimentary mouth (stomodæum), lined with mucous membrane, and presented upon the alveolar ridge of the superior maxillary bone distinct prominences which were found to be produced by the teeth pertaining to the superior maxillæ; that is, four molars and two canines, the incisors being absent. The salivary glands were not present.

A microscopic examination of the nasal trumpet revealed the following facts: Externally it was covered with integument, which passed into the blind sac situated at the free extremity, without exhibiting any tendency to become converted into mucous membrane. Numerous sebaceous and hair follicles and rudimentary muscular fibres were found. In the interior the lateral nasal cartilages were represented by a truncated, hollow, cartilaginous cone, compressed laterally, notched at the apex, and at the base of the inferior margin showing a tendency to inversion. In the interior of this cone was a nearly circular cavity lined with mucous membrane. This cavity was separated from the blind integumental pouch by a partition about three millimetres thick. No cartilaginous or bony septum could be discovered, either in the proboscis or at its point of attachment to the frontal region.

The eyeball was exposed *in situ* by the removal of the roof of the orbit. The levator palpebræ was represented by a single well developed fan-shaped muscle, supplied by the occulo-motor nerve, arising normally from the apex of the orbit, to be inserted into the superior tarsal cartilage. On dividing this muscle, two straight muscles, lying at equal distances from the median line, were found arising from the apex of the orbit and inserted into the anterior portion of the eyeball; these represented either two superior recti or a single rectus and a superior oblique. The absence of any intermediate tendinous portion and their similarity in origin and insertion, as well as the points hereafter described with regard to the interior of the eye, incline us to the former view. A single inferior rectus and a lateral rectus on each side were found; the right lateral rectus was joined at its anterior third by a band of muscular fibres, probably representing a single inferior oblique, arising from the left inferior wall of the orbit. An ophthalmic ganglion was found situated between the right lateral rectus and the optic nerve. This, together with the relations of the inferior oblique muscle, would indicate that the single eyeball corresponded with the right, whilst the left was undeveloped.

The sclerotic was well developed; the cornea, iris, and pupil circular; a single lens of normal shape with no signs of a groove or fusion of two lenses. The vitreous humour and ciliary processes were normal, and the choroid present as a separate tunic.

The retina was detached and too friable to admit of accurate study. On removing the retina, two coalesced cribriform spots were found, as if the optic nerve had partially subdivided at this point, although outside of the eyeball not a trace of division could be detected. On cross-section of the optic nerve at its point of passage through the sclerotic, it was found that the apparent fusion of two cribriform spots was associated with an attempt at subdivision of the optic nerve at that point, two central retinal arteries being detected, which, outside the eyeball, united to a common trunk. This was the only sign present of any attempt at subdivision, or indication of fusion in the eyeball, though no study could be made of the retina.

On examining the auditory apparatus, the two external auditory canals were found to communicate directly with the pharynx, their entrance being

surrounded by two tympanic bones separated by an interval of 17 mm.; there was no sign of tympanic membranes. Lying between the tympanic bone and the periotic capsule (hyo-mandibular cleft) were found the malleus, incus, and stapes of each side. The handles of the two mallets were directed downwards, forwards, and inwards, and the head of each articulated with an incus; the processus gracilis of each malleus turned inwards towards the median line, and was united by a slender splint-like bone with its fellow of the opposite side. This probably represented an undeveloped lower jaw. The stapes and anvil were partly surrounded by an imperfect bony canal formed by the tegmentum tympani, representing an imperfect middle ear. The two processes of each incus were directed upwards, outwards, and backwards, the long process of each articulating with the stapes whilst the short process was attached to the roof of the imperfect tympanic cavity by a distinct ligament. The stapes articulated with the oval window, and was somewhat deformed. The chain of ear ossicles was, therefore, directed from within outwards instead of the normal reversed condition.

The larynx and trachea were normally developed, the two plates of the thyroid cartilages being ununited. The epiglottis and hyoid apparatus were present, but there was no trace of a tongue. The muscles below the position of the hyoid were found in their ordinary condition, but above there was an indistinct undifferentiated muscular mass which represented the undeveloped muscles of the floor of the mouth. The pharynx was attached to the base of the skull and ended in a cul-de-sac above, separated from the stomodæum by a partition 1 cm. in breadth, no communication existing between the pharynx and the nasal cavity already described.

With regard to the skull, the following may be noted: The occipital segment is normally formed, consisting of the basi- supra- and ex-occipitals. The parietal segment has a well developed basi-sphenoid, two alisphenoids or greater wings, and is completed by well developed parietals. The frontal segment is, however, somewhat modified, the presphenoid is absent, whilst the orbito-sphenoids, or lesser wings, have been displaced backwards, uniting with the basi-sphenoid posterior to the origin of the alisphenoids. They have also approached laterally towards the median line where they have coalesced, presenting in the centre a single optic foramen. The appearance of the combined orbito-sphenoids is, therefore, that of a triangular splint-like bone, having its base resting on the internal upper edges of the approximated alisphenoids, not articulating with the orbital plates of the frontal, and its apex co-ossified with the basi-sphenoid; as a result of this, there is no pituitary fossa, but instead a bridge of bone leaving a space of about 3 mm. between it and the base of the skull. As a consequence, also, of this union of the orbito-sphenoids and absence of the presphenoid, the sphenoidal foramina are represented by a single opening situated between the internal edges of the alisphenoids, and beneath the bridge-like orbito-sphenoid.

The pterygoid processes are small and not well developed.

The frontal bone is represented by a single bone in which, however, a distinct sutural line can be detected. It is greatly malformed, having only about one-half the breadth and two-thirds the normal height. No frontal prominences can be detected, the glabellum and internal angular processes are entirely absent, the supra-orbital ridges of the two sides meeting in the middle line form a single ridge bounding the orbital

cavity above. The external angular processes are well developed, and articulate with the malar bones below. There is a single orbital plate with a large deficiency in the centre corresponding to the ethmoidal notch: posteriorly it articulates with the alisphenoids instead of the orbito-sphenoids. The ethmoids are entirely absent. The temporal bone has all of its elements represented, the petromastoid presenting its normal appearance and relations, with the exception that a thin plate of bone has been given off inferiorly to insheathe an imperfect tympanic cavity, taking the place, to a certain extent, of the tympanic bones which we have described above as being displaced to an abnormal position at the base of the skull. The squamosal element has likewise been displaced inwardly so that at the base of the skull they are but five millimetres apart instead of five centimetres, which is about the space normally separating them in a fœtal skull of the same age. There is also no trace of a glenoid cavity or fissure, unless the latter be represented by a wide gap lying between the squamosals and the thin plate of bone already described as given off by the petromastoids.

The face is in an exceedingly rudimentary condition, but few of its bones being developed. The ento-pterygoids are present, but have not united with the pterygoid process of the sphenoid, being, indeed, situated posteriorly to them. The palate bones are likewise feebly developed, being represented by two small plates of bone lying between the pterygoid processess. Of the two superior maxillaries, only the bodies are developed, and of these, the alveolar borders form the greater part, the palate plates, parts bounding the nasal cavities, tuberosity, infra-orbital ridges, and premaxillary portion and nasal spines being entirely absent. A small orbital surface, formed by the conjoined plates of the two bones, exists, however, and the two infra-orbital ridges are well marked.

The malar bones are normally formed, but owing to the arrested development of the superior maxillary bone, they approach one another and are separated in the median line by a distance of five millimetres instead of four centimetres, the normal intermalar space. On this account they form almost entirely the inferior and external boundaries of the orbit. A distinct zygomatic process is present, but it does not unite with the zygomatic process of the squamosal.

Of the remaining bones of the face, the lachrymals, nasals, turbinates, and vomer, are entirely absent, whilst the inferior maxillary is only represented by the small splint-like bone previously described.

The single orbit is formed by the following bones; Above by the orbital plate of the frontal, posteriorly by the orbital surfaces of the alisphenoides, inferiorly and laterally by the malars and conjoined orbital plates of the superior maxillaries. The elements absent that enter into the normal construction of the orbit are the orbital surfaces of the ethmoid, the lachrymal, orbito-sphenoids, and orbital plates of the palate bone. The shape of the orbit does not differ widely from the normal form, and has entering into it the following apertures: A single optic foramen, a single sphenoidal fissure formed by the union of the right and left, two rotund foramina, and two spheno-maxillary fissures.

The nasal cavities are entirely absent.

The chief interest to be derived from the study of monstrosities, such as described above, lies in the explanation of the causes which have led to the various deviations from their normal development. While we have

found accounts of numerous monsters which, from their general appearance, probably resembled, in many points, the one described, the narrow-mindedness of custodians of museums, who are satisfied with a general description of the exterior and are then content to suspend the specimens in jars for the amazement and *instruction* of the curious, has greatly interfered with a scientific knowledge of the laws of teratology. Without a thorough dissection of the internal parts nothing, as to the causes producing deformity, can be determined.

A study of the monstrosity described above shows that all the deviations from the normal type can be explained by the modification or non-development of certain parts.

Normally, the brain develops in the following manner: The anterior end of the primitive medullary tube dilates into three cerebral vesicles; of these the first remains as the thalamencephalon, sending off anteriorly two prosencephalic buds to form the hemispheres. These, in their turn, send off each a secondary bud, the rhinencephalon, or olfactory lobe. In the case before us, however, the thalamencephalon has been normally developed, but instead of sending off a pair of prosencephalic buds, but a single bud was formed, which, however, partially divided posteriorly into two. The reason for considering that but a single bud was given off, rather than that fusion occurred between two primitive buds, lies in the absence of any partition wall between the homologues of the two lateral ventricles. No secondary buds, or rhinencephala, were given off, hence the entire absence of olfactory lobes.

In the same manner, we believe but a single optic bud appeared; hence the median position of a single eye.

The explanation ordinarily given for the approximation of two eyes, or the presence of a single eye in the comparatively well-described group of simple cyclops monstrosities, is that two primitive optic buds have converged and coalesced in the median line; in many cases this may be the correct explanation; but where, as in the present instance, but a single eye has appeared, or where there is a close coalescence of two eyes, it appears to us much more probable that but a single median primitive optic bud has been given off from the thalamencephalon, and that this bud either remains entirely single, thus producing but a single eye as in this case, or that in those cases which present an apparent fusion of two eyeballs and optic tracts, the primitive median optic bud has subdivided more or less completely into two. It is difficult to conceive that after the coalescence of two primitively distinct optic buds, the mesoblastic tissues, which go to form the tissues of the eyeball, should be able so to adjust themselves as to produce a single perfect and normally developed eye.

Owing to this development of a single optic bud, or it may be the convergence and coalescence of two primitively distinct buds, the molecular

arrangement of the embryonal cells situated at the base of the skull is so disturbed that we find in all these cases of cyclops that the fronto-nasal process fails to develop. As a result of this follows the entire absence of all the bony parts, developing normally from this process, viz., the ethmoid, nasals, lachrymals, vomer, and pre-maxillary bone, and hence the presence of the eye beneath a nasal proboscis belonging only to the skin.

The absence of the lower jaw and malformation of the auditory apparatus, an arrangement which, so far as we have been able to learn, is entirely unique, may be explained as depending upon defective development of the first visceral arch. Normally from the base of the primitive cartilaginous cranium we have given off on each side two cartilaginous ventral rods, which pass down into the anterior visceral arches. From the first of these we have given off the palato-pterygoid plate, which passes out into the maxillary process, to form the basis of the upper jaw, whilst the continuation of the rod extends downwards, under the name of the cartilage of Meckel, into the mandibular arch and forms the basis of the lower jaw. The second cartilaginous rod forms the hyoid series. In the higher vertebrates the proximal element of the mandibular arch is converted into the malleus, the homologue of the quadrate bone of lower forms, whilst the proximal element of the hyoid arch is converted into the incus, the homologue of the hyo-mandibular. The remaining auditory ossicle or stapes is formed, according to most authorities, from a part of the periotic capsule.

In the present case, the deviations from the normal form have been produced by the irregular development of the cartilages of Meckel. These, instead of passing downwards, turned inwards towards the base of the skull, to meet in the median line. Hence, therefore, the lower jaw, which consists of a pair of membrane bones developed in the tissues surrounding the cartilages of Meckel, is represented by a small, slender, splint-like bone, lying at the base of the skull, at a point corresponding in position with that attributed above to the irregularly developed cartilages of Meckel. From this arises also the displaced position of the ear ossicles, which occupy a position at the base of the skull corresponding closely to their normal position in an early stage of development of the hyomandibular cleft.

The hyomandibular cleft, or space between the primitive mandibular and hyoid visceral arches, remains in the higher vertebrates as the external auditory meatus, tympanic cavity, and Eustachian tube. Owing to the approximation of all the parts towards the median line, this canal has been in this specimen very much shortened; the tympanic cavity exists, as we have already described, in an imperfect condition, bounded by the petro-mastoid and squamosal elements of the temporal bone alone, the tympanic bone, from its displaced condition, not entering into its construction. As a result of this, we find that the portion of the canal corresponding to the

external auditory meatus is quite short, and enters the pharynx below the position of the middle ear, though communicating freely with it. A Eustachian tube does not exist, since the ear ossicles are not entirely closed within the petro-mastoid bone, the malleus lying entirely within the cavity of the pharynx. The internal ear was normal.

ARTICLE XIV.

ON THE USE OF CARBONATE OF AMMONIA AS A STIMULANT. By E. P. BREWER, M.D., Ph.D., of Norwich, Conn.

FEW remedies have been longer known[1] or more widely used, than carbonate of ammonia, and yet so scantily understood in *modus operandi*. Most varied and extravagant powers have been ascribed to it. It has passed through every phase of theraphy, and mingled with almost every order of medicinal classification. In turn it has been pronounced a convulsant, an antispasmodic, a derivative, a constructor, a depressant, and to-day it figures in the capacity of a stimulant. Our modern therapeutics tell us that it enhances the physiological powers of the gastric and bronchial membranes, that it vivifies the circulating and nervous system, and spurs into activity the excretory emunctories. All of this being accepted as a natural result, the lapsing stages of disease are purported to be met and subdued by its administration. Typhoid fever, pneumonia, septicæmia, and adynamic states are almost as certain of receiving their portion of it as is ague its portion of quinine. And its value in preserving life in a multitude of cases I do not deny. However, it is my earnest belief that we should have more fixed indications for its use, that it has become too much the habit of using this drug as a *dernier ressort*, unguided by reason and without recognizable indication beyond a general condition, an adynamic state. Impelled by this belief, I entered upon a series of experimental inquiries to determine, if possible, the indications for its use as a stimulant, the results of which I will now record.

In the variable scope of action of the ammoniacal salts perhaps no action is so common as their stimulating properties. It pervades in varying intensity every one of the compounds now known, and although always present, an intensity of sufficient power to be of large medicinal value is to my knowledge confined to one salt, the carbonate of ammonia. This gives an individuality to the drug and marks that feature that has preserved its memory in the annals of medicine through the darkening shadows of many centuries. Standing unique in its group in that peculiar power of

[1] This medicine was long known to the Hindoos.

exaggerating physiological activity, a study of its chemico-physiology if rightly conducted to success will elicit the basis of force in this specific drug.

At the onset it is of paramount importance that we perfectly understand the changes occurring in the stomach and the form of its entrance into the blood. To this end we have recourse to practical study.

Expt. 1. Kitten, weight 14 ounces; pulse 104; respirations 30 per minute. Exhibiting chloroform to narcotism, a soft catheter was passed into the stomach and five grains of carbonate of ammonia, in solution, injected. Slightly withdrawing the catheter, I introduced the end of it into a water-bath of lime-water in a manner that any gas generated in the stomach could escape and be collected in a receiver. In a few moments a bubble of gas escaped, then very slowly a series of them, in all perhaps three cubic centimetres. Examining the receiver of lime-water with the gas above it, at their junction a white film was visible, this being fairly distinct with a hand magnifying-glass. The gas gradually disappeared, and in two hours was entirely absorbed, leaving behind only a white sediment. Collecting the precipitate it was found to consist of the carbonate of lime.

The evolution of gas following the ingestion of the medicine, portrays a chemical action between it and the gastric juice, and further, this gas consisting of carbonic acid, as shown by its combination with lime, would seem to prophesy that the drug entered the system in other form than that of the carbonate.

To verify our study, we proceeded as before, and entered upon *Expt.* 2. Excepting a slight residue of unabsorbed gas in the receiver it furnished the results of Expt. 1.

Expt. 3. The ammonia was introduced as in the previous experiments, and the catheter withdrawn. In three minutes the cat was bled to death. On opening the abdomen the stomach was found distended with gas. Tying the œsophagus and pylorus, the stomach was removed, and its gaseous contents collected over a water-bath of aqua calcis. Again, the gas united with the lime, forming a precipitate of lime carbonate.

Other experiments (now 10 in number) of like nature gave results in total harmony with the preceding. In view of eliciting the acting agents in this chemical union, we singly placed in contact with carbonate of ammonia all of the ingredients of the gastric juice. No chemical action is determined with any of them except hydrochloric acid. However, when they are placed in contact, ebullition follows, and a gas—carbonic acid—is given off, the chlorine of the acid unites with the ammonia, producing muriate of ammonia, leaving free one atom of oxygen and two atoms of hydrogen, which unite to form water. As a legitimate sequence, we would *suggest* that the free hydrochloric acid of the gastric juice (Schmidt, Eberle, Prout, Bidder, and Dunglison) combines with the carbonate of ammonia, forming muriate of ammonia and water, and evolving carbonic acid. In the language of chemistry, the reactions may be expressed as follows: $N_4H_{16}C_2O_6+4HCl=4NH_4Cl+2H_2O+3CO_2$.

Muriate of ammonia being the result of the chemical action, it would seem a self-evident truth that upon it devolved the responsibility of effects, and that, when prepared without the body and administered, it

would in efficacy as a stimulant be equal to carbonate of ammonia, and further that their toxic doses would be uniform.

In point of fact, such is diametrically opposite to the testimony of research, the truth of which we will put to test.

Expt. 4. Kitten, weight 13 ounces; pulse 110; respiration 34 per minute. Under chloroform anæsthesia I threw into the stomach *one drachm* of muriate of ammonia. Discontinuing the anæsthesia the animal recovered consciousness, got up and walked about. In a few moments it tried to vomit but was unsuccessful. The nausea apparently soon ceased, and the kitten suckled its mother. The pulse increased to 130, and the respiration to 56 per minute. The kitten was disposed to sleep the rest of the day, and beyond a watery diarrhœa on the following day no other symptoms were manifested.

Expt. 5. Kitten, weight 15 ounces; pulse 106; respiration 35 per minute. *Five grains* of carbonate of ammonia, in solution, were injected into the stomach, chloroform being exhibited. In five minutes the breathing became irregular and deeper, twenty-eight per minute. The animal tries to walk but staggers and trembles, and then ceases the effort, which evidently causes much exhaustion. In twenty minutes the front paws twitched convulsively, and with perfect regularity with the onset of respiration. In thirty minutes the breathing was ten per minute, and the pulse 140, strong, and regular; the twiching of the paws continues.

In sixty minutes life was extinct, the respiration becoming slower and slower until about ten minutes before death, when it became very rapid, and shallow, and ceased. On dissection the stomach was found distended and injected, particularly at its pyloric extremity, while the intestine was normal. Both lungs were intensely congested, and the heart firmly contracted on its left side. Cutting the vena cava, the heart commenced to dilate and contract. Being unable to bury the carcass at that time, I rolled it in a cloth and left it in my study. Three hours later, returning for its burial, I inadvertently removed the covering, and to my surprise found the heart still sluggishly contracting. Entirely severing the heart from the body, and placing it in tepid glycerine and water, the contractions continued two and one-half hours longer, or in all five and one-half hours from the time of death.

To dispel the possibility of tolerance to the ammoniacal salts, in the subject of experiment 4, we submit him, after a lapse of four days, to—

Expt. 6. Weight 13 ounces; pulse 115; respiration 38 per minute. At 9.05 A. M., *fifteen grains* of the carbonate of ammonia are injected into the stomach.

9.10 A. M. Trembling of the extremities; vomiting; pulse 130; respiration 50.

9.12 A. M. Respiration deeper, the inspiratory effort especially prolonged; clonic spasms of the fore and hind extremities.

9.15 A. M. General convulsions and opisthotonos; relaxation quickly follows; pulse 110, full and strong; respiration 20, with prolonged inspiration.

9.17 A. M. The animal utters a cry; the eyes oscillate and become fixed upwards; the tongue protrudes, the jaws work, and the whole body becomes rigid; relaxation follows; pulse 120; respiration 4 per minute.

9.21 A. M. Respiration ceases; the heart continues to pulsate. The time elapsing between the ingestion of the drug and death was sixteen minutes.

Immediately dissecting the body, I found the stomach intensely congested at its pyloric extremity and along the greater curvature; œsophagus normal; lungs filled with blood; the right heart congested; irritating the heart with my scissors it contracted sluggishly. Relieving the distension of the right side by severing the vena cava, the contractions augmented in force. Now removing the heart and placing it in tepid water and glycerine, it retained its contractile irritability for one hour and fifty-five minutes.

The results of experiments 4, 5, and 6 clearly contrast the varying lethal doses of muriate and carbonate of ammonia. Of the former—the muriate—one drachm was taken and retained without deleterious influ-

ence; of the latter—the carbonate—the ingestion of five grains was followed in one hour by death. Again, the animal that took muriate of ammonia (expt. 4) with impunity succumbed in sixteen minutes (expt. 6) after the exhibition of fifteen grains of carbonate of ammonia. Hence, then, we confirm and sustain the assertion of former research that carbonate of ammonia is a more potent poison than the muriate of ammonia.

Hastily reviewed, these facts would seem to invalidate my assertion that carbonate of ammonia is converted into muriate of ammonia, but, in unison with careful study and experiment, I shall show that such is not the case; contrariwise, they form the strongest link in our chain of evidence.

If the distinctive actions of the two salts be due to their assimilation—unchanged—the hypodermic administration of the same quantity as taken in by the stomach should produce at least an equal, if not a better, defined train of symptoms.

This proposition being only susceptible of experimental solution, I resort to—

Expt. 7. Subject a kitten. Weight 12 ounces; pulse 112; respiration 38 per minute. Dissolving ten grains of carbonate of ammonia in ninety minims of water, I injected the whole quantity hypodermically into our subject. In ten minutes the pulse beats numbered 125 per minute, and the respiration 35, otherwise no change was manifested. The appetite and activity remain unimpaired. No abscess followed.

Repeating the procedure in *Expt.* 8, I used 15 grains of carbonate of ammonia, and secured the same result, or rather the same lack of result.

Without remark I will cite—

Expt. 9. Cat. Weight 24 ounces; pulse 95; respiration 28. Aided by chloroform, I passed a catheter four inches into the anus, and injected twenty grains of carbonate of ammonia in solution. A part of it escaped. In ten minutes no symptoms being present, I injected ten grains more, all of which was retained for forty-five minutes. No symptoms being then present, the anal plug was removed, and the bands securing the cat loosened. The animal got up and walked about. In a few moments it passed considerable mucus, and continued to do so at intervals in the next twenty-four hours. No other symptoms were present. The appetite was uninfluenced. The remaining portion of the day it appeared lethargic.

Desiring to corroborate the above I made—

Expt. 10. Kitten. Weight 12 ounces. Cutting into the abdominal cavity, I secured a loop of intestine, opened it, and injected ten grains of carbonate of ammonia in solution. No effect being produced at the expiration of two hours, I then injected ten grains into the stomach. In eight minutes a slight convulsion occurred; in twenty minutes life was extinct. Immediately dissecting the animal, I found the heart still beating. Removing and suspending it in tepid water and glycerine, the contractions continued for two hours and ten minutes.

Our last four experiments (7, 8, 9, and 10) demonstrate that the action of carbonate of ammonia is largely influenced by the avenue of its introduction. By the stomach a rapid and definite action follows; hypodermically, or by the rectum or small intestine, very insignificant results are known, although confessedly a measure of power is exercised (an amount equal and allied to any other ammoniacal salt). Concisely stated, the

result reached is, that *carbonate of ammonia, exhibited by any other avenue than the stomach, sacrifices its distinguishing physiological and toxic properties.*

Inasmuch as a digestive change is effected in the stomach that is unknown to the intestine, the only rational inference is, that by virtue of this process, the distinctive cogency is therein developed or made available.

It has already been shown that the gastric changes depend upon the presence of hydrochloric acid, and, again, that in such situation where it is absent, the drug is inoperative. Now then, if we were to neutralize the gastric acidity and introduce the salt, what would be the result? This leads us to—

Expt. 11. Kitten. Weight 15 ounces. After washing out the stomach with a strong solution of bicarbonate of soda, I injected ten grains of the carbonate of ammonia along with two scruples of soda bicarbonate. Ten minutes later, I washed out the whole quantity with lukewarm water. No untoward symptoms having been presented at the expiration of an hour, I washed the stomach with dilute hydrochloric acid ʒss–ʒiv, and injected seven grains of carbonate of ammonia. In ten minutes, as before, I washed out the substance with tepid water. During this operation severe convulsions developed and continued until death twelve minutes later, an interval of twenty-two minutes elapsing between the introduction of the poison and death.

We have, at last, reached the experiment that, before all others, links a digestive change to the stomach and fixes indubitably the responsibility upon the hydrochloric acid of the gastric juice. Through its influence the almost innocuous remedy—by the rectum, intestine, and cellular tissue—is transformed into a virulent poison, and gifted with striking medicinal qualities.

Lucid as is the importance of the role played by hydrocloric acid, the manner of consummating this action is not so well defined. It has been suggested that hydrochloric acid, by virtue of chemical affinity united with carbonate of ammonia, forming muriate of ammonia, carbonic acid, and water. To support this supposition, we noted the constant presence of carbonic acid in the stomach after the administration of the carbonate.

Muriate of ammonia, being the only possible remedial agent of this reaction, it would appear we ought to show that the actions of the two salts were identical, but in this we signally failed. Upon what do the specific powers of carbonate of ammonia depend?

That the carbonate is converted into the muriate there can be no doubt; that upon this change depends the powers of carbonate of ammonia, I have distinctly proven; and, further, that the carbonate and muriate of ammonia *do* have distinct specific properties is indisputable.

In considering the chemical qualities of the stomach we momentarily lost sight of two important conditions: 1st. The intermediate state of our compounds in the chemical process; and 2d, the ever acting vital function absorption.

The action of the acid on the salts may be divided into two states, disintegration and construction. Between them the elements exist in a free

state or weak chemical union. For example, betwixt the breaking down of the carbonate by the acid and its reconstruction into the muriate, the hydrogen and chlorine of the acid and the ammonia and carbonic acid of the carbonate must exist uncombined. Although this period may be very brief, it is not too brief for the subtle force of absorption to act upon and utilize the elements as they exist. In this style, in my belief, are the specific actions of the carbonate of ammonia acquired. While the ammonia is in its free state, between the two combinations, it undergoes absorption, and exercises all of the properties we attribute to the carbonate salt. The *correct* formula of the stomachic change is as follows:

$$N_4H_{16}C_2O_6 + 2HCl = 2NH_4Cl + 3CO_2 + H_2O + O + 2NH_4.$$

I maintain that the *action of carbonate of ammonia is not* due to the presence of the carbonic acid in combination with the base, but *is dependent on the absorption of free ammonia while the salt is chemically combining with the hydrochloric acid of the gastric juice.* The instability of the compound which renders it so susceptible of digestion is the quality that ranks it above all other ammoniacal salts.

In support of this *fact* I offer the observations drawn from forty-nine distinct experiments, of which representatives have already been cited.

1st. Carbonate of ammonia, administered by the rectum, cellular tissue, and intestine, is almost completely robbed of its stimulating properties.

2d. By the stomach it acts with great power when we permit the full play of the acid gastric juice; the converse being apparent when we neutralize the acid of the gastric juice.

3d. That the ultimate results of the chemical union is a product totally different in power and latitude of action from carbonate of ammonia.

Analyses of blood made soon after the exhibition of a dose of carbonate of ammonia show an excess of free ammonia.

The details of the analyses are so complex and tedious that I omit them.

Evidences of Stimulation.—Of late years particular stress has been laid on the selective action of stimulants upon the respiratory and cardiac centres; and, in truth, the support of these being the chief objects of stimulant treatment, a study of their relation to drugs is not only logical, but of palpable value. As the pronounced stimulation of the respiratory centre has been long known and utilized, I refrain from remarks, further than to confirm such phenomena as constant and reliable.

In reference to the cardiac centre I believe that its stimulation is more decisive than commonly credited. For illustration, I refer to my experiment hitherto detailed. The effects are clearly divided into two stages. Primarily, the heart appears transiently embarrassed, the pulse is rapid, weak, and irregular. Following hard in its footsteps is the deeper more permanent and valuable action. The pulse becomes full and strong, and regular and slow; the irritable and irregular action subsides into a regular rhythmical discharge of force. The cardiac centre is awakened to exaggerated sensibilities, and the controlling nerve force strengthened.

In twenty experiments I exsected the heart from the body, and suspended it in a lukewarm solution of glycerine and water. The results were varied in the duration of the contractility, yet constant in the exhibition of marked irritability.

For convenience of comparison I tabulate my results :—

Number of experiments.	Duration of contractility after death.
1	5½ hours.
4	4 "
7	3½ "
4	3 "
2	2 "
1	2⅛ "
1	1⅛ "

Average duration of contractility $3\frac{3}{20}$ hours.

The intensity of the irritability *pari passu* with stimulation cannot be as well portrayed to the mind in words as by the eye from Nature's own vivid picture.

Practical Deductions.—The acid gastric juice being the charm, as it were, that loosens the secret powers of carbonate of ammonia, its practi cal applications are necessarily fettered to the class of maladies in which the gastric functions are but slightly affected. In many forms of acute disease this condition obtains. In its graver types, in which stimulants are required, the system seems to be menaced by the sheer diversion of the vital energies, by the destruction of the systemic equilibrium. The system contains adequate force to retain life and overcome the disease, but it is wanting in the remote quality of exercising it—that quality that we commonly promote by the use of stimulants. Here we have the typical indication for carbonate of ammonia: unimpaired or slightly deteriorated gastric function, failing cardiac and respiratory action, impaired distribution of energy—here the drug will promote the rapid, powerful, and selective regulation of nerve force.

Unlike alcohol, it supplies nothing, *i. e.*, has no nutrient value, its service is comparable to the good overseer to willing subjects, who directs their labours and departs, leaving behind a deep and lasting impression.

In most chronic diseases and in acute disease of long duration, partaking of the typhoidal type, carbonate of ammonia is of no value. The gastric secretions are generally scanty and altered, hence incapable to perform the compulsory act of digestion, and if perchance enough acid were secreted, the remedy would be of little service, for the specific indications for its use are absent. The distributing force is not at fault, there is no surplus of latent energy, the cardiac and respiratory centres are not at discord with this reserve force—no, they are acting to its extreme capacity, the whole circumference of the vitality is worn almost to destruction; support, food is demanded, the vital forces must be cherished.

Plainly carbonate of ammonia would not be remedial; instead of conserving vitality it would lay to waste the fading glow of life, and lead the economy with quicker pace toward the ultimate doom of life—death.

The digestive changes proclaimed by my experiments, instead of involving new principles in the therapy of the drug, appeal to experience for further support, and place its therapeutic indication upon rational and palpable factors. Dr. Gerhard, after an extensive experience in the treatment of epidemic typhus by this drug, in 1836, wrote, in the *American Journal of the Medical Sciences*,[1] that "although we are perfectly aware of its powers as a rapid and effectual stimulant, particularly when the fever is complicated with a disease of the respiratory organs, we were rather disappointed in its effects. It was irregular in its action, and in the dull muttering of delirium of typhus seemed totally without power." This is the reflected experience of every close observer.

I repeat, in the low adynamic states, when the stomach is largely impaired, carbonate of ammonia *is* "totally without power." The complications of fever, in which the efficacy of the drug is vaunted, occurred at the onset of the disease, or before the stomach was seriously deranged. In consequence of the powerful stimulant properties exhibited in the healthy man, the drug has been too largely applied with the final result overriding the specific indications and a perfect ignoring of the manner of perfecting the phenomena.

Empirical observation in the recognition of the good and harmful influences, the short duration of the effects, and the increased exhalation of ammonia following its administration, has somewhat militated against error and vaguely pointed toward the true physiological process. But as these important instructions have been scattered and their importance neglected, even in the bulk of our standard text-books, an improper use of this valuable drug is still extensively exercised.

In conclusion, I therefore submit the exploded digestive changes (which seem as firmly rooted in experience as in experiment) to be the explanation of its mode of action and the reliable data to govern its administration.

ARTICLE XV.

CASE OF SUPPOSED SPONTANEOUS ANEURISM OF THE POSTERIOR TIBIAL ARTERY. LIGATURE OF FEMORAL. INCISION INTO SAC ONE MONTH AFTER, FOLLOWED BY SERIOUS HEMORRHAGE. AMPUTATION THROUGH THE THIGH. RECOVERY. ALSO, A RÉSUMÉ OF THE LITERATURE OF THE SUBJECT.

By R. A. KINLOCH, M.D., Professor of Surgery in the Medical College of the State of South Carolina, Charleston, S. C. (Read at meeting of the Amer. Surg. Association, Sept. 1881.)

CASE.—J. W. R., white, adult, aged 45, coming to me from the interior of the State, was placed in the surgical ward of the City Hospital on the 20th of June, 1880. On examination he presented a disease of left leg, the limb being so large posteriorly from knee to ankle as to give the

[1] Vol. xx. page 320.

appearance of an enormous tumour springing from the posterior surface of the bones. There was besides much general œdema of the member. The limb was semi-flexed, quite warm to the touch, and very painful. The following were the dimensions of the leg below the knee: Greatest circumference $22\frac{3}{4}$ inches; circumference close to popliteal space 19 inches; diameter near ankle $14\frac{1}{4}$ inches; normal leg, greatest circumference 15 inches.

There was no history of injury to part. The only recollection of any accident suggesting traumatism was of having been thrown from a wagon six or more years ago. There was no injury to limb at that time. Three years ago trouble with the leg began, without known provocation, in the form of a "small hard lump," in the upper portion of the calf. This increased very slowly, and had at one time, he thought, some pulsation.

The great and rapid development had been during the last seven months. The helplessness and pain of the limb had induced him finally to seek advice. At the suggestion of Dr. Johnson, of Walhalla, he had come to Charleston to be under my care. Dr. Johnson had not watched the case for any time, but six months previously he had attended the man for an erysipelatous condition of the leg threatening suppuration, and subsequently he regarded the disease as aneurismal, and treated it with bandage and tourniquet without result. There remained some doubt in his mind as to correctness of diagnosis.

Tumour was semi-solid, elastic and indistinctly fluctuating to the touch, smooth, not lobulated. The tegumentary surface was congested and of a dusky bluish colour. There were large subcutaneous veins distinctly visible stretching across the swelling. There was apparently no diminution of the swelling upon direct pressure, nor was the tumour influenced by interrupting the flow of blood through the femoral artery. There was no pulsation, but when the palms of the hands were made to bear firmly upon a large extent of surface at about the region of the greatest circumference of the limb, a slight upheaving, or rather an excentric movement of the mass, was recognized. This was not perceived when the flow through the femoral was cut off by pressure at the groin. There was no *bruit*, that I could discover, although, one of my young friends thought that he recognized such. There was a trifling enlargement of some of the lymphatic glands in the groin of the affected side. The appearance of patient was healthy; body spare; countenance indicating care and suffering; there was nothing expressive of so-called malignant cachexia. He slept badly at night because of pain in the limb; his appetite was defective; his pulse quickened.

Diagnosis.—Aneurism most probably of posterior tibial artery, or possibly of lower portion of popliteal, recently become diffusive or false, sac filled with fibrin and coagula. Many of my medical friends examined the case, and the majority of them entertained serious doubts as to the correctness of this diagnosis. Opinions varied as to the existence of an encephaloid, a sarcomatous growth, a pulsating tumour of bone, etc. The time the tumour had existed, its mode of early development, its recent sudden and rapid progress, its uniform smooth surface, the excentric swelling upon removal of pressure, the character of the pain complained of, and the general condition of patient, induced confidence in my own opinion, but I could not forget how often surgeons more experienced and more capable than myself had, under similar circumstances, been led into

error. The rarity of *spontaneous* aneurism in the arteries of the leg was a strong argument, with some, against the conclusion I had reached.

In view of the suffering of the patient, and the size and condition of the supposed sac, believed to be filled with coagulum, I thought the ligature of the femoral was the most promising operation. After the ligation, I proposed to aspirate the tumour with the object of confirming the diagnosis.

Operation. Jan. 23*d*, 12 M. I ligated the femoral below the apex of Scarpa's triangle. Intending to use the antiseptic catgut ligature, I was at the required moment much disappointed in failing to procure a proper article; I therefore employed carbolized silk, and, as commonly done, retained one end of the thread, with which to remove the loop after the ligature had cut through the vessel. For the first time in my own experience and observation in the ligation of the femoral in the continuity, I experienced an unexpected trouble from hemorrhage. Just as I passed the needle under the vessel, there came a sudden and free gush of blood. I perceived that the bleeding was arterial, and yet could scarcely believe I had injured the main vessel either with the knife or needle. The flow was soon controlled by the finger, and by an assistant pressing the femoral at the groin. I then discovered that the hemorrhage came from a branch of the main vessel, which had been ruptured in passing the needle. This vessel I secured, then tied the main ligature to the femoral immediately below the small branch. It may be interesting to remark that this accident is alluded to by the late Mr. Syme, of Edinborough, so well known by his brilliant operations in connection with aneurismal disease. He is the only author, as far as I am aware, who mentions the fact. He says, when describing the operation on the femoral in the first edition of his Principles of Surgery: "The needle, though introduced with care and dexterity, sometimes occasions a pretty copious flow of blood, which fills the wound almost as rapidly as it is wiped out, but ceases upon the ligature being tied, and probably depending upon the injury of a small branch happening to come off at the part." The wound was closed by four silver wire sutures and dressed with carbolized lint, and a compress of cotton. I now aspirated the tumour, but failed to extract any more than a little bloody serum. The aspirating tube was delicate, and allowed of no free escape of the contents of the sac. The curiosity on the matter of diagnosis was thus not satisfied. Patient was put to bed and given an anodyne. The limb was wrapped in several layers of cotton wadding.

Omitting the details of my clinical notes for several days, I will only state, that the operation at once afforded some relief to the tension of the tumour, but patient was restless and slept badly after the second day.

25*th*. There was quite a rise in temperature (104° to 106°), and I felt that the wound could not be doing well.

26*th*. Removed dressing and discovered a circumscribed ovoid mulberry-coloured spot, two inches long by one wide, just below and a little to the outside of the wound made for ligating the femoral; also evidences of cellulitis extending from this point over an area of several inches to the outer and lower aspect of the thigh. There was evidently beginning gangrenous action. To meet this I made two free incisions through the diseased structures, and gave exit to a spoonful or two of putrescent fluid and some offensive gas. The lowest suture holding the wound was cut and removed, and a director introduced from this point towards the incisions just made to the outer and lower side of the thigh. Some more

offensive pus was thus liberated. After a thorough cleansing and disinfecting of the part with carbolized water, the carbolized oil dressing was reapplied. Patient was ordered quiniæ sulph. ℈j, opii gr. ij, twice a day. Diet, milk and bread, brandy ℥j, three times a day. Wound to be dressed twice a day. Greatest circumference of limb 21½ inches.

Feb. 1*st.* Patient's condition has improved. The temperature is now normal, appetite has returned, the gangrenous tissues have separated, and the cellulitis seems arrested. The greatest circumference of limb was now 20½ inches. The general treatment had been by quinine and opium with an occasional cathartic, nutritious diet, and a moderate amount of brandy.

12*th.* Had continued to improve. The tumour presented about the same appearance, but the subsidence of the general œdema of the limb was more marked. I was surprised this day by a condition first discovered by one of my medical friends, who had looked in at the case, which seemed to indicate a *destruction of a portion of the inner edge of the tibia*, about three inches below the tuberosity. Through the tegumentary covering we recognized, what we believed to be, loss of substance, and there was seemingly a crescentic sharply defined excavation of the bone, one and a half inches in length. Upon slight pressure particles of bony tissue appeared to yield under the finger. I was startled by this phenomenon, and the faith in my diagnosis a little shaken. Many medical friends examined the limb, and all agreed that the bony tissue had undergone destructive absorption in connection with the growth of the tumour. Some saw in this additional support to the idea of a sarcoma, or a cancerous disease of the bone; others now regarded the case as one of osteo-aneurism. A few thought that the pressure of an aneurism proper would explain the destruction of the osseous tissue, just as has been noticed in connection with internal aneurism encroaching on the spinal column. I could scarcely believe that the pressure of an aneurism originating behind the tibia, could be sufficient to destroy the bone while the soft tissues behind the leg had yielded so freely to the growth of the tumour; nor could I understand, why, if such were the case, the inner edge merely of the bone should be destroyed, and in so restricted and precise a manner.

13*th.* The ligature came away this A. M. without hemorrhage. Patient's condition good. Measurement showed, however, no further diminution in size of tumour other than what might be experienced by the subsidence of the general œdema.

24*th.* (One month after operation.) Patient's condition unchanged. He was quite anxious to return home into the country. Consultation was held with several of my colleagues, and it was thought advisable, before consenting to patient's departure, to explore the tumour by an incision and clear up the question of diagnosis. In the event of the case being a sarcoma, or other tumour strictly of the bone, we proposed to amputate through the thigh. *If* the diagnosis of aneurism was sustained, we hoped to find the artery secure, when we could risk emptying the sac and treat this antiseptically. If the artery was permeable, we would secure it by means of a double ligature, or amputate through the thigh as a *dernier ressort*. Patient was chloroformed. I punctured the tumour close to the inner side of the tibia, and passed my index finger into the opening. There was no hemorrhage. I then enlarged the wound sufficiently to turn out the greater portion of the contents of the tumour. The aneurismal character of the disease was thus determined. I proceeded to break up and turn out the remaining layers of fibrin and blood clot. Upon feeling

for the crescentic-shaped ulceration of the tibia above described, I was amazed to find *the bone intact and smooth*. The apparent change in its structure was explained by the location, and the yielding upon pressure of the dense fibrinous layers and coagulum. The soft tissues forming the sac were thinner and softer at the point where we had imagined the bone absorbed. The tumour had evidently tended to point at this region, and the fibrinous deposit adhering closely to the inner border of the tibia, above and below the spot, had led us into error in regard to the condition of the bone. I had almost emptied the aneurismal sac, and had syringed out the immense cavity several times with carbolized water, preparatory to introducing a drainage-tube and adjusting a compress and bandage, when suddenly there came a fearful gush of arterial blood. In an instant the cavity filled. I ran my hand quickly into the sac and pressed the deeper tissue against the posterior face of the tibia, and at the same time called an assistant to press the femoral at the groin. The fearful flow was thus arrested. Carefully withdrawing my hand, I found that the pressure of the femoral commanded the bleeding. I now enlarged the opening into the sac, and endeavoured to find the point where the artery communicated. The adherent layers of fibrin and clot rendered my search futile, and I was convinced that to secure the vessel at all it could only be by ligatures *en masse*, which might include other important structures, and, most likely, *not* succeed in obliteration of the vessel, because of the suppuration and gangrenous action to be subsequently encountered. A hasty consultation was held, and amputation determined on. This I practised close above the knee. Patient recovered rapidly.

April 5th. He was discharged from the hospital and returned home in good health.

Dissection (by Dr. Edw. P. Rose) proved the case to be an *aneurism* of the posterior tibial, about two inches below its origin. The artery was pervious both above and below the opening into the sac. It had been fed by collateral vessels entering the femoral below the point of ligature. The opening of the sac and the detachment of the clots and fibrinous layers had occasioned the hemorrhage.

Remarks.—The rarity of spontaneous aneurism of the vessels of the leg is well known to the profession, and readily accounted for by the size and location, together with the anatomical and physiological peculiarities of these vessels. Crisp, in his tables of 501 aneurisms, reports but two cases of aneurism of the posterior tibial. Norris, in his tables showing mortality of the ligature of the femoral, records three cases, and one of these is found in Crisp's tables. Dr. D. H. Agnew, in his recent work on surgery, alludes to having seen one case in Philadelphia in 1875, in the practice of Dr. De Forest Willard. I do not propose to go further into the opinions or experience of authorities, ancient or modern, but will record at the end of this article all of the cases of this disease I have been able to find in the limited field of research to which I have had access. But here I beg to say that I use the term *spontaneous* aneurism with some hesitancy, and simply to imply that in the cases reported there is a want of reasonable proof of origin from traumatism. I have admitted a few cases into the table with a supposed traumatic origin because I regarded

the proof of such origin insufficient and thought it best to reserve judgment. Moreover, I recognize the fact that, upon a close investigation of the history of all the admitted spontaneous or true aneurisms of the larger arteries, there is frequently found attached to this some antecedent blow or some undue exertion. Perhaps, in the strictest pathological sense, there is never a spontaneous aneurism of the posterior tibial. But practically we must take a different view of the matter.

The differential diagnosis between aneurism and other tumours, including diseased conditions of the bones, has frequently puzzled the best surgeons. In this case, perhaps, the uncertainty of diagnosis, when patient came into my hands, was as striking as in any case upon record. The deception arising from the peculiar relation of the fibrinous layers and blood clot to the border of the tibia was singularly interesting. And, lastly, the question as to the treatment pursued may be considered as a very debatable one. I regarded ligation as the promptest means for relieving the patient of his suffering. Pressure had been tried, and now its promise was too uncertain; its attendant pain or discomfort not likely to be borne. The ligation of the femoral I deemed worthy of trial, but I did not feel sanguine of its success. It was practised somewhat as an experimental procedure, and only because of the condition of the sac, as resulting from the length of time the disease had existed. The double ligature to the posterior tibial itself would have been the most thoroughly surgical operation, but in the state of the limb this could hardly have been accomplished, and most certainly not without opening the sac. Had the case been seen in its development, the double ligature of the artery would have been preferred to the Hunterian operation on the femoral.

Opening the sac I was opposed to as a primary operation. As a general rule too, surgeons are agreed upon not opening the sac after the use of the ligature. I ventured, for reasons given above, to depart from this rule a month after I had applied the ligature. The question may be asked if this practice did not cost the man his limb? Or if a cure would have resulted had the sac not been interfered with? I incline to the belief that there would have been no cure; that the full establishment of the collateral circulation would have brought renewed trouble and progressive disease. The dissection proved that the artery was pervious above and below the sac, and that it received abundant supply of blood. It was but a matter of time when there would have been demanded either amputation or the old operation of Antyllus.

Cases of Spontaneous Aneurism of the Posterior Tibial Artery.

No.	Date.	Sex and age.	Authority.	Reporter.	Treatment.	Result.	Remarks.
1	Feb. 1816	..	Med. Chir. Trans., vol. vii. (Norris)	Travers	Ligature of femoral.	Death on 7th day.	Ligature separated on fifth day, and patient died of *hemorrhage* on the 7th day.
2	Aug. 1817	Male, 27	Dub. Journ. M. & C. Sci., 1835-6, viii. p. 241.	Browne	Ligature of femoral; 2 ligatures used.	Death 41st day.	Formation of sinus along course of the sartorius muscle.
3	Aug. 1830	Male, 59	New York Med. Jour., 1830-1, i. p. 260.	Post	Amputation of thigh.	Death 7th Sept.	Dr. Cheeseman, operator; mortification of foot Aug. 20.
4	Nov. 1830	Male, 49	Med. Gaz. Lond., 1831, viii. p. 635.	Key	Ligature of femoral.	Gangrene; death.	
5	Sept. 1832	..	South's Trans. of Chelius, vol. ii. p. 543.	Green	Ligature of femoral.	Cured.	Had a fall down stairs 12 mos. previous; pulsation of leg noticed 6 months after this, and posterior tibial did not pulsate at the ankle. This may, with doubtful propriety, be classed as *spontaneous aneurism*. Ligature separated on 39th day. Two months after operation the leg had only diminished an inch in circumference.
6	1833	..	Prov. Med. and Surg. Jour., 1833 (Crisp's Table).	Tyrell	Ligature of femoral.	Cured.	
7	Jan. 1839	Male, 48	J. Soc. Sci. Med. de Lisbon, 1839, ix. 21.	Pereira	Amputation	Recovery.	
8	Aug. 1847	Male, 35	Monthly Jour. Med. Sci., 1852, xiv. p. 368.	MacKenzie	Aneurism laid open and ligature applied above and below sac.	Cured.	Six months after operation, limb was a little curved.
9	Feb. 1851	Male, 34	Virginia Med. and Surg. Jour., 1853, i. p. 364.	Gibson	Compression by bandaging and tourniquet over the popliteal artery; limb on inclined plane.	Cured (May 9th left hospital apparently well; but leg a little stiff).	Only cause ascribed, standing in one position a long time with muscles fixed.
10	June 1852	Male, 40	New York Med. Times, 1852, i. p. 233.	Markoe	Ligature of femoral.	Death 38 days after operation.	Suppuration of sac, and peritonitis.
11	Jan. 1854	Male, 27	Tr. Path. Soc. Lond., 1853-4, vol. iii. 115.	Walton	Ligature of femoral.	Death.	May have been due to over-exertion in pushing; but he had serious disease of the *aortic valves*, which caused death.
12	Jan. 1855	Male	Bull. Soc. de Chir. de Paris, 1859, ix. p. 258.	Lagout	Ligature of femoral.	Cured; anchylosed knee and semi-flexed leg one year after.	Operator, M. Fleury. Supposed to be due to unusual exertion in pulling on boot. This not established however.
13	Aug. 1871	Male, 32	Brit. Med. Jour., 1872, i. p. 101.	Curgeonven	Tourniquet over femoral; elastic collodion over tumour.	Cured.	Swelling came on gradually in calf of leg four months before admission.

No.	Date.	Sex and age.	Authority.	Reporter.	Treatment.	Result.	Remarks.
14	May 1872	Male, 40	Sperimentale Firenze 1873, xxxi. p. 345.	Landi	Compression; injection of ergotin to tumour; ligature of femoral June 13; amputation	Death Aug. 26.	
15	Nov. 1872	Male, 30	Lancet, Lond., 1873, ii. p. 301.	Stockwell	Tourniquet to femoral and popliteal.	Cured.	Attributed to stooping.
16	Dec. 1872	Male, 31	Lancet, Lond., 1873, ii. p. 809.	Shaue	Compression and ligature to femoral; gangrene; amputation	Recovery	Left hospital July 22, 1873, with good stump; no heart disease. Supposed stamping with foot caused disease.
17	1873	Male, 19	Dub. Jour. Med. Sci., June 1,1877, vol. lxiii.	Richardson	Digital compression 154 hours, and then instrumental compression 115 days before cessation of pulsation.	Cured.	This patient had had a swelled leg and pain in sole of foot for two years previous. Twelve months before admission to hospital had been kicked on tuberosity of right tibia. Only ten weeks before pain began unaccountably in right leg and foot, followed by swelling at seat of disease.
18	April 1874	Male, 24	Liguria Med. Genoa, 1874, xiv. p. 404.	Arata	Compression; ligature of femoral	Partial cure of right tibial tumour.	Ant. and post. tibial involved —two tumours. Case not reported as finished.
19	July 1875	Male, 66	Phil. Med. Times, 1874-5, v. p. 821.	Willard	Pressure on femoral in Scarpa's triangle.	.....	Case of fusiform aneurism of ant. and post. tibial. Aneurism cured, but patient had kidney disease, which was progressing to a fatal termination.
20	1878	Male, 63	Med. Rec., N. Y., 1878, xiii. p. 318.	Crin	Compression with Esmarch's bandage.	Cured.	Five weeks after.
21	1880	Male,	Brit. Med. Jour. Lond. 1880, i. 126.	McSwinney	Laid open by mistake; attempt to tie artery; amputation	Recovery	
22	1880	Male, 45	Trans Am. Surg. Soc.	Kinloch	Ligature of femoral; subsequent opening of sac 30 days afterward; hem'rhage; amputation through thigh.	Recovery	In the early period of the disease had been treated by bandaging and the tourniquet without good result.

Besides the above cases we notice that Mr. Erichsen, in his Surgery, 5th English edition, vol. ii. p. 119, alludes to a preparation of a small aneurism of the posterior tibial in the Museum of St. George's Hospital. Prof. S. D. Gross, in his treatise on Surgery, vol. i. p. 793, refers to a case of aneurism of the same artery as recorded by Sir Astley Cooper.

ARTICLE XVI.

A DEFENCE OF THE CÆSAREAN STATISTICS OF AMERICA. By ROBERT P. HARRIS, A.M., M.D., of Philadelphia.

IN the *Medical Times and Gazette* of April 8th, 1882, under the head of "Porro's Operation," are the following editorial remarks, page 359: "The risk of Cæsarean section is very great. Statistics are quite misleading, from the tendency of operators to publish a case if successful, but try and forget it if fatal." . . . "Dr. Harris, of Philadelphia, has got together a number of cases, from which he represents the mortality as being only twenty-five per cent., a conclusion evidently affected by the fallacy to which we have alluded."

Remarks of the same import having been repeatedly made at home and abroad, editorially, in medical societies, and to me by letter, it becomes me to set the matter at rest by a few words of explanation. It is true that operators are often inclined to keep their unsuccessful cases out of print; but that does not prevent their being obtained, if the statistical hunter is sufficiently persevering, and not easily discouraged by the amount of time and labour required. As an offset to this, it is equally true, that some of the most encouraging Cæsarean cases here and in Great Britain were withheld from publication by their operators, and not obtained until after their death. There are two ways of collecting statistics. The common and easy one is to search all the published records in books and journals, and tabulate the cases; setting down the percentage of success as an evidence of the relative standing of the particular operation in question. The other plan is to begin the real work of collecting just here, and to make a persevering search, if it takes years to accomplish it, after the unrecorded cases of the country, without the least regard to their success or failure. Many of my correspondents will bear me out in the claim, that I have made as persevering searches after fatal cases, as I have ever made after those that were the contrary. My work commenced in 1869, and I may say that in twelve years, the whole United States were very thoroughly searched over; as evidenced by the fact, that 55 unpublished cases were obtained, as an addition to 69 published ones. Had I stopped with the 69 I should have shown a mortality of only 46½ per cent.; but the addition increased the mortality to a fraction above 57 per cent. As the record for the United States now stands, we have saved 53 out of 124 cases. The 55 unpublished cases, although adding largely to the percentage of deaths, were by no means as fatal as might have been presumed; for 16 of them recovered, or as many as were saved out of the first 100 in Radford's statistics of Great Britain.

I have never claimed that we had had a mortality of only 25 per cent. This I presume has been founded upon a statement to the effect that but

28 of the 124 operations had been performed in good season; rated by the time in labour, and the condition of the woman when operated upon; and that 21, or 75 per cent. of the operations, resulted in safety to the mothers. Of the 28 children, 23 were delivered alive, of whom 4 lived but a short time; leaving 21 mothers and 19 children as the results of 28 *early* or *timely* gastro-hysterotomies.

To sum up, we have had 124 Cæsarean operations in the United States, 7 in the West Indies, and 1 in Mexico, with 60 women saved, or $45\frac{5}{11}$ per cent. in North America.

It has been a great surprise to many, who were inclined to overrate the dangers of the Cæsarean operation in the United States, to find that even the unrecorded cases presented a recovery percentage of $29\frac{1}{11}$. It is a very simple matter to decry statistics, on the ground that "all good cases are reported, and bad ones withheld;" but such a guess has not been sustained by the facts, as shown in this record. Conscious of entire honesty in my searches after the truth, it is not very pleasant to hear remarks, which indicate a want of confidence in the thoroughness of the work as presented. I know that in tracing rumored operations to get the truth, I have rejected a large number; that from one to five years have been expended over some cases; and that those retained have ample evidence of reliability. My only regret is, that the corresponding work in other countries has not been done in the same manner.

The claim has been made recently, by one of our own writers, that European operators are more inclined than Americans to publish their cases. This may be true in a measure as to the present, and in particular as to Great Britain, where weekly journals are in active search for medical intelligence; but personal experience leads me to a very different opinion as to the past, and particularly in regard to some of the continental countries. As to England herself, I have only to cite the fact that notwithstanding the Cæsarean searches made and published on three several occasions by the late Dr. Thomas Radford, of Manchester, he failed to secure the only case in his country in which the operation had been performed twice upon the same woman, although the parties resided in Sheffield, thirty-five miles distant. Had Dr. Radford sought out unrecorded cases, as I have done, through correspondents, instead of by notices in journals, he would hardly have failed to learn of the operations by the late Mr. Henry Jackson and his son. There is this difference between Dr. Radford's "*communicated*" cases and mine. His, with very few exceptions, were on the eve of publication, and mine were chiefly old lost cases, or such as there was no intention of ever reporting. Of the 55 unpublished cases, 13 were obtained after the deaths of the operators, and 9 through other physicians, either present or having knowledge of the operations.

329 SOUTH TWELFTH STREET, May 27, 1882.

REVIEWS.

ART. XVII.—*Etude du Processus Histologique des Néphrites.* Par la Dr. CH. HORTOLÈS, Interne des Hopitaux de Lyon, etc. 8vo, pp. 182. Paris: J. B. Bailliere et Fils, 1881.

SINCE the great work of Rayer, the contributions of French writers to the pathology of Bright's disease, have not been of great importance. In France, of late years, few, if any, studies upon this subject have appeared equal in value to those of Johnson, Dickinson, Grainger Stewart, Wilks, and Gull and Sutton among English writers, and of Virchow, Reinhardt, Frerichs, Bartels, and Weigert among German writers.

The work of Hortolès treats of the histological changes met with in acute and chronic nephritis, particularly in the different forms of Bright's disease. His investigations were conducted under Renaut's direction in the laboratory of general anatomy in the medical school at Lyons. They are, therefore, in the spirit of the modern French school of histology, which owes its excellent methods and results in greatest part to Ranvier. Hortolès work, however, suffers from a defect only too commonly met with in French scientific productions, namely, ignorance of results obtained in the same field of study by investigators in other countries. It is owing to this reproach that in some instances the author puts forward as discoveries facts already established, and, on the other hand, sometimes treats slightingly or not at all important points in controversy. His work, however, is valuable as it embodies original and careful investigations upon a most important subject. It treats professedly only of the histological details of the lesions produced in inflamed kidneys, and does not discuss from a general point of view the pathological anatomy of Bright's disease. The careful histological study of the renal lesions of Bright's disease has led Hortolès, as well as many other recent observers, to the view that the current classifications of this disease are based upon erroneous pathological conceptions. This relates more particularly to the sharp distinction usually drawn between the parenchymatous and the interstitial forms of Bright's disease, and to the propriety of regarding purely parenchymatous changes as inflammatory.

After a brief introductory chapter devoted chiefly to a historical review of the divergent views, relating to the nature and extent of the interstitial and parenchymatous changes in nephritis, the writer gives the results of his studies upon certain disputed points in the *normal histology* of the kidneys. Taking up first the structure of the glomeruli, he notes that in the simplest forms of kidney, as in the lamprey, there exists fully developed fibrillated connective tissue between the glomerular capillaries, and that the whole glomerulus is surrounded by a layer of endothelial cells. In man he regards the cells which lie over and between the capillaries of the glomerulus as connective-tissue cells, and as all that remains of the fully-developed connective tissue found in the glomeruli of the lamprey.

These cells are thin and branching, and comparable to similar cells found around capillaries in other parts of the body (couche rameuse perivasculaire of Renaut). The epithelium which covers the glomerulus in early fœtal life is not found after birth. The author is at much pains to show that the walls of the capillaries in the glomerulus do not present the usual endothelial markings after injecting them with nitrate of silver, a fact which had previously been established. Hortolès is unable to demonstrate the existence of lymphatic vessels or of lymph-spaces, lined by endothelium, in the parenchyma of the kidney. He notes the presence of a single layer of smooth muscular fibres around the efferent vessel of the glomerulus, and signalizes the absence of any muscular coat in the interlobular veins. Adducing Heidenhain's observations, he calls attention to the highly differentiated character of the epithelium lining the convoluted tubes, which, like other highly organized cells, such as nerve-cells, muscle-fibres, etc., responds to the action of inflammatory irritants, not by proliferation, but by degeneration and death. He believes that Cornil has falsely interpreted the hyaline drops (sarcodic excrescences), which often exude from these cells after death, as evidence that they give origin to the material of hyaline casts.

Hortolès describes three forms of *acute inflammation* of the kidneys. To these he gives the names, acute congestive œdema of the kidney or congestive nephritis, phlegmonous œdema of the kidney or phlegmonous nephritis, and acute catarrhal œdema of the kidney or mixed catarrhal nephritis. This application of the term œdema to various forms of inflammation is contrary to English, and, in fact, to general usage, and cannot be considered a happy choice. Indeed, many of the expressions and views which the author emits from place to place concerning inflammation in general are singularly crude. Thus, in the process which he calls acute-congestive œdema, he says that emigration of white blood-corpuscles does not constitute inflammation unless the fixed cells proliferate, this latter change only distinguishing the process from passive œdema. In true congestive inflammations the walls of the vessels must soften and give rise to a genuine hemorrhage! In phlegmonous inflammations the embryonic cells finally "die and are transformed into pus globules!" Emigration of white blood-corpuscles he refers to increased blood-pressure.

The type of acute congestive œdema of the kidney is *scarlatinal nephritis*. The main element in this process is emigration of white blood-corpuscles from the intertubular capillaries. Hortolès, therefore, is in harmony with many recent observers in considering scarlatinal nephritis rather as interstitial than as parenchymatous nephritis. The following are among the noteworthy features in his description of the pathological histology of scarlatinal nephritis. The emigration begins in the periphery of the renal lobules and gradually extends to the medullary ray in the centre. No emigration takes place from the capillaries of the glomeruli as their peculiar structure does not permit it. The albumen and blood-corpuscles which appear in the urine are derived from the capillaries between the tubes, particularly between the collecting tubes, and not from the glomeruli. White blood-corpuscles accumulate within the capillaries of the glomeruli and obstruct the circulation in them, thus causing diminished secretion of urine. This accumulation of white blood-corpuscles was mistaken by Klebs for an increase of intercapillary nuclei, and therefore interpreted by him as a true glomerulitis, which does not occur. Casts are rarely found in the tubes. The epithelium of the tubes rarely under-

goes any marked change, there being at the most a moderate swelling and increased cloudiness of the capsular epithelium and epithelium of the convoluted tubes. The scanty connective-tissue cells between the straight tubes swell up, become granular and proliferate. The usual termination of the process is in resolution, which occurs with great ease and rapidity, the embryonic cells being rapidly swept out of the kidney by the lymph-current. Exceptionally the termination is in chronic nephritis, in which case the young cells give origin to connective tissue, and many glomeruli become obliterated.

It cannot be said that Hortolès establishes all of these points. Particularly unsatisfactory is his treatment of the changes in the glomeruli in this, as well as in the other forms of nephritis. He seems to be acquainted only with the older observations of Klebs, and to be ignorant of the more recent interesting studies of Langhans and Ribbert upon glomerulitis. He in no way proves that albumen does not escape from the glomerular capillaries in scarlatinal nephritis.

Phlegmonous nephritis and the renal changes in *leucocythæmia* are described chiefly in order to contrast the behaviour of the emigrated white blood-corpuscles in these conditions with that in congestive nephritis. Phlegmonous nephritis is distinguishable from congestive nephritis by the circumscribed character of the inflammation, by the exudation of fibrin, and by suppuration. In leucocythæmia the exuded white corpuscles become separated from each other by the development of a reticulated stroma.

The next form of acute nephritis considered is *mixed catarrhal nephritis*, the type of which is the renal inflammation which sometimes occurs in the second and third weeks of typhoid fever. The histological elements which characterize this form of nephritis are, *a*, desquamation and proliferation of the epithelium of the collecting tubes and of the tubes of Henle (catarrh of the tubes), *b*, swelling, granular degeneration, and loss of nuclei of the epithelium of the convoluted tubes, *c*, a moderate emigration of white blood-corpuscles in the periphery of the lobules, *d*, an abundant exudation of an albuminous fluid from the glomeruli, which fills the tubes, escapes into the intertubular spaces, and is often absorbed by the veins. Three kinds of casts are met with in the urine. The hyaline casts result from coagulation within the tubes of the albuminous fluid which exudes from the glomeruli. The nucleated epithelial casts are indicative of catarrh of the straight tubes of whose desquamated epithelium they are formed. The granular casts (which may become fatty by action of the urine on the granular material) are derived from the degenerated granular cells of the convoluted tubes. The changes in the epithelium of the convoluted tubes, to which changes the name parenchymatous inflammation has hitherto been applied, are purely degenerative, and not inflammatory. "The term parenchymatous nephritis should be banished from pathologico-anatomical nomenclature," says our author. Especial emphasis is laid upon the abundant exudation from the glomeruli of an albuminous material, which coagulates in a hyaline form within Bowman's capsules, in and between the tubes, and within the veins. This albuminous œdema, as the author calls it, is entirely different from congestive as well as from passive œdema. Emigration of white blood-corpuscles always occurs in this form of nephritis, but is much less in degree and extent than in scarlatinal nephritis. In this form there is no blocking up of the capillaries of the glomerulus by white blood-corpuscles. If the disease lasts two or

three weeks new connective tissue is produced. This is formed from the embryonic cells. With considerable detail is described the growth of new connective tissue in islands composed of the colloid or hyaline substance described above as resulting from the coagulation of the albumen filtered from the glomeruli. These colloid foci constitute the "myxoid points" of Renaut. The embryonic cells inclosed within them become stellate and anastomose with each other, thus producing mucoid tissue, which then develops into ordinary fibrillated connective tissue. This formation of connective tissue in myxoid points occurs, not only between the tubes, but also within the tubes and within Bowman's capsules. The same process can be studied in chronic nephritis. An exaggerated form of this variety of nephritis may be called the eclamptic form. With it there is a rapid development of severe uræmic symptoms. It is characterized anatomically by an enormous exudation of the coagulable albuminous fluid from the glomeruli, so that the kidney is fairly inundated by it, and the circulation through it is checked. This form of typhoid nephritis has been described by Renaut.

In criticism of Hortolès's views concerning the two forms of acute Bright's disease which he describes, it must be said that few will be inclined to accept the sharp distinctions which he draws between what he terms congestive nephritis and mixed catarrhal nephritis. The hyaline exudation in, and sometimes between, the tubes is confined to no particular form of nephritis. While it is true that in some cases epithelial changes are extensive and emigration scanty, while in others there is abundant emigration with little alteration in the epithelium, these facts cannot serve as a basis of useful classification of acute Bright's disease, for there may be every possible degree of combination as regards the relative proportion of the epithelial changes, and the emigration of white corpuscles. From the great attention which has been paid to typhoid nephritis in France, this complication of typhoid fever would seem to be more common in that country than with us, and Hortolès's observations must be considered a valuable contribution to our knowledge of its pathological histology. Concerning the development of mucoid tissue in the hyaline albuminous exudation one cannot help thinking that the peculiar shapes which wandering cells may assume in a colloid medium may have been mistaken for developing connective-tissue cells. This suspicion is increased by the assertions as to the development of this tissue in the interior of the tubes, and even in ovarian and other cysts with colloid contents.

A chapter is devoted to the consideration of the alterations which the kidneys undergo in consequence of the passive congestion resulting from heart disease. The *cardiac œdematous* kidney is the name under which these changes are embraced. They consist in catarrh of the straight tubes, in degeneration of the epithelium of the convoluted tubes, in the exudation of coagulable albuminous fluid from the glomeruli, in emigration of white blood-corpuscles, and in the new formation of mucoid and fibrillated connective tissue. The pyramidal substance is said to be more affected than the cortical. The examination of a single case has served Hortolès as the basis of his description of the changes induced by chronic passive congestion of the kidneys. His general conclusions, therefore, are unsupported by sufficient evidence, and are of little weight. A wider experience would have taught him that chronic passive congestion of the kidneys in cardiac diseases may exist for a long time without producing inflammation of these organs.

In the remaining chapters are described the lesions of *chronic nephritis*, and these are followed by a *résumé* of the general conclusions arrived at by the author. In chronic nephritis the development of new connective tissue plays an important role, although epithelial changes are never absent. Hortolès believes that the fibrous tissue of chronic nephritis is formed not out of granulation tissue, but out of mucoid tissue. A "mucoid stage" precedes the stage of fibrous atrophy of the kidney. The mucoid tissue is formed mainly by proliferation of connective-tissue cells, although emigrated white corpuscles may have some share in its production. He describes three modes of obliteration of the Malpighian tufts; *a*, by gradual thickening of the capsule of Bowman, accompanied by fatty degeneration of the glomerular capillaries; *b*, by the same thickening accompanied by hyaline or colloid exudation within the capsule, and consequent compression of the glomerulus; *c*, by the development of fibrous tissue from the cells surrounding the capillaries of the glomerulus, a true glomerulitis. Changes in the coats of the branches of the renal arteries are of predominant importance in some forms of chronic nephritis, particularly in that accompanying lead poisoning, and in that attendant upon atheroma of the arteries. These changes are thickening of the adventitia (periarteritis), and thickening of the intima (endarteritis obliterans). In the smaller arteries the thickened intima may present a hyaline appearance, and a similar hyaline transformation may occur in the capillaries of the glomerulus. Nothing is said concerning changes in the arteries in other parts of the body. The membranæ propriæ of the tubes become hypertrophied. The epithelium in those tubes which are surrounded by newly formed fibrous tissue is atrophied, but possesses nuclei which stain deeply. On the other hand, the epithelium of other tubes is swollen and often without nuclei capable of being stained. Concerning the atrophy of tubes and the formation of cysts the author has nothing new to offer. The same catarrhal and degenerative changes in the epithelium, which have been described in connection with acute nephritis, are also present in the chronic forms.

With the exception of the role assigned by Hortolès to the development of mucoid tissue, there is not much new in his account of the histological lesions of chronic nephritis, and it may well be doubted whether mucoid tissue is to be found with the constancy and to the extent described by the author.

In conclusion may be quoted his statement concerning parenchymatous and interstitial nephritis.

"If the name parenchymatous nephritis be given to the morbid process characterized by cloudy swelling of the striated epithelium, and its local death as indicated by impossibility of nuclear staining, and if, on the other hand, the name interstitial nephritis be applied to the inflammatory changes in the intertubular spaces, one can boldly assert that parenchymatous nephritis, as well as interstitial nephritis, does not exist as an isolated state, but that the two forms of lesion are always united in the same diseased kidney" (page 124).

The work is accompanied by five beautifully and faithfully executed chromo-lithographic plates, representing drawings from microscopical sections of diseased kidneys. W. H. W.

ART. XVIII.—*Recent Works on the Diseases of Women.*

1. *Diseases of Women, including their Pathology, Causation, Symptoms, Diagnosis, and Treatment. A Manual for Students and Practitioners.* By ARTHUR W. EDIS, M.D. Lond., F.R.C.P., M.R.C.S. With One Hundred and Forty-eight Illustrations. Philadelphia: Henry C. Lea's Son & Co., 1882.
2. *A Clinical Hand-Book on the Diseases of Women.* By W. SYMINGTON BROWN, M.D., Member of the Gynecological Society of Boston, etc. New York: William Wood & Company, 1882.

THE two volumes, the titles of which are at the head of this article, stand at the opposite poles of book-making. The fact that they are upon kindred subjects, and both written for the same class of readers, serves but to illuminate the positive merits of the one, and the negative merits of the other. At the first glance, in view of the overburdened state of gynecic literature, we cannot help feeling some regret that Dr. Edis should feel obliged to write a book upon the diseases of women. But, if we are compelled to submit to the infliction of Dr. Brown's book—and we evidently cannot help ourselves—there is no better, or more welcome remedy, than a good one like that of Dr. Edis.

It is a fact, not at all unusual, that both the volumes are written for the student and junior, or general practitioner, and it certainly does not reflect credit upon the authors, that this fact is stated in an apologetic way in the prefaces. While we feel able to realize the character and age of the general practitioner—"country practitioner," Dr. Brown calls him—we must confess a doubt as to the same qualities in the student for whom the volumes are written. After reading Dr. Brown's work, it is clear as to the character of his students; but we fancy that Dr. Edis includes under that generic term, all the gynecologists, and especially all the ovariotomists. It is necessary to make but one quotation to prove this. "The diagnosis of abdominal tumors being generally one of much difficulty to the student," etc. Now, we would like to know, when that period of life ceases, and the illuminated moment comes to the gynecologist when the abdominal diagnosis is easy.

The arrangement of Dr. Edis's book is logical, and naturally results from a systematic study of the parts. In this natural order we have malformations of the uterus, followed by displacements, and to the latter are given four excellent chapters. Following in the order given, we have chapters on functional disturbances in circulation of the uterus, inflammation in its various degrees and forms, benign tissue changes in uterine texture, new growths, malignant diseases. Next in order come the ovaries, to which four chapters, amounting to about one-fifth of the volume, are given. The uterine appendages, aside from the ovaries, including extra-uterine pregnancy, are next in order, followed by a consideration of the disorders of the vulva and vagina in separate chapters. Purely functional disorders, among which the author classes amenorrhœa, chlorosis, and vicarious menstruation, form a suitable close to the systematic portion of the book. The remaining part of the volume, consisting of eight chapters, is rather faulty in the grouping of subjects. In view of the elementary character of the greater part of the work, it would have given the student a more scientific idea of dysmenorrhœa, leucorrhœa, uterine hemorrhage, menorrhagia, and metrorrhagia, not to have given these symptoms

separate chapters; but considered them in connection with the diseases of which they were symptoms. Leucorrhœa and uterine hemorrhage are not diseased entities, but are symptoms merely, and must be so understood if they are to be properly treated. Whenever they are considered in a text-book, separate from their morbid antecedents, the latter is in danger of being overlooked.

Upon the subject of displacements, the author gives a striking illustration of the value of oblique facts, as Czermak calls them. The false is as good as the true, so long as it passes current. Speaking of anteversion, the author says that the "normal position of the uterus corresponds with the axis of the pelvic brim. The uterus occupies as near as possible the centre of the upper part of the pelvic cavity, being suspended between the rectum and bladder, about midway between symphysis pubis and the sacrum." Such a sentence in a new text-book designed to form the after-coming gynecological opinion and practice is enough to discourage every earnest worker. Yet, there are reasons for hope. We well remember certain other matters which have had to struggle their way through to the light. In our early battle for the intra-uterine stem, a very temperate clinical article was declined by a New York journal, because such practice was dangerous in the hands of the general practitioner in the opinion of the editor. What was then doubtful is now legitimate. The uterus never was, and never will be found in the position described by Dr. Edis as the normal. There is now a very rich literature upon this subject, and Dr. Edis, and all others, ought to inform themselves relating to it before they write upon the subject. The author uses the term congenital in relation to uterine malpositions. The best usage condemns this use of the word. The human female is not born with a uterus as we know it in the adult; in fact, it may be said not to exist. For a displacement, therefore, to be congenital is impossible. Dr. Edis's position in regard to the use and indications of the intra-uterine stem, is a sensible and practical one, and affords an excellent example to some American authors. For cervical anteflexion, the plan to incise the posterior wall is advised, which we believe is not the better way to treat it. It is dangerous, and does not always cure.

In the treatment of hypertrophic elongation of the cervix, no consideration it given to telescopic elongation of the supra-vaginal neck, thus simulating true infra-vaginal elongation. Amputation is strongly advised, differing somewhat from the American method. Upon the subject of laceration of the cervix uteri, we are pleased to notice that Dr. Edis quotes Simpson with approval to the effect that this injury is not the result of mismanagement in labour. He thus sets a worthy example to many American teachers, who are satisfied with this unscientific explanation of the accident. In a concise paragraph he enumerates the various causes that may contribute to this injury, which will tend to do away with false notions regarding its causation. The after-treatment of the operation is not such as experience has taught us is necessary. Confinement in bed for ten days or two weeks, and a low diet, as well as directing the patient to pass water by turning upon her hands and knees, are uncalled-for refinements. On the contrary, the patient may be allowed to walk about her room, have a full diet, and in the case of repair of slight lacerations, she may be permitted to ride out. The moral effect of this is very great, as, in many cases, women who are in great need of the operation will refuse through dread of the confinement. The various chapters upon ute-

rine inflammation are rich in prescriptions adapted to the conditions described. Some of them are quite complicated, and have a sort of Fothergill flavour in the number of their components; their chief fault, however, is in the large number offered for the choice of the reader. It strikes us as a better plan to detail the treatment in a general way, and let the student do his own compounding. In no other way can the student be taught the thorough mastery of his remedies that will make him a skilful prescriber.

Nothing that we have ever read is better in its way and purpose than the chapters upon ovarian tumour and diagnosis of abdominal tumours. The plan of arrangement is excellent, and the matter admirably condensed, giving the reader the matter of a whole volume upon this special subject. But what drew our attention at the first glance was the very fine writing exhibited, showing that Dr. Edis possesses descriptive powers of a high order. We are tempted to give the reader the benefit of a paragraph. He is speaking of the vascular system of an ovarian cyst. "The vessels supplying the tumour enter at its base, enlarge with its growth, and ramify very freely on its inner surface. They form a complete network in and under the peritoneum; and the capillaries passing into the fibrous layer traverse it, and have a peculiar arrangement on the inside, where they form knots of anastomosis, with bulbous dilatations and terminal pouches, like, but less regular than, those found in the chorion. Outside, under the peritoneal covering, numerous large and tortuous veins may be traced plainly. Nerves pass with the vessels into the substance of the coats and lymphatics, often of large size." We do not know of a more vivid description to be found in modern medical writings.

With excellent judgment the author has introduced a chapter upon extra-uterine gestation, somewhat of an innovation in works upon the diseases of women; but, as the author has managed it, of great practical value. In this he has set an example, which, we doubt not, every coming writer in this department will follow. In this chapter Dr. Parry's work lives after him in the cordial appreciation of Dr. Edis.

In the sections upon plastic operations, the various procedures are well described and illustrated, with the exception of Dr. Tait's, in which the description is very meagre, and the wood-cut of no value. As Dr. Tait's operation for the repair of the female perineum is difficult to understand from a mere description, and as it affords some great advantages to the patient, it ought to be freely illustrated. In the description of vesico-vaginal fistula the operation figured is that of Simon. For English readers this is an improvement, as the method of Simon gives better promise of success, especially to the novice, than the American operation. Indeed, following the method of Sims or Emmet, gives the most uncertain results of any gynecological operation to the beginner, and nothing but the constant example of the inimitable skill of these great operators has kept the method in use to the exclusion of more scientific procedures among us.

In the chapter upon hysteria, we have nerve tire, or neurosthenia, which gives Dr. Edis occasion for a long quotation from Mitchell upon his milk treatment. This treatment has drawn to itself marked attention in England. Several years ago, Dr. Graily Hewitt invited the reviewer to meet him at a small hospital in Gower Street—his "flexion hospital," as he called it, in which he was employing a system of rest and forced feeding, similar to Dr. Mitchell's plan, with the exception of massage and electricity. He seemed quite elated with his results, and generally exhibited them to his medical visitors. Near the conclusion of the volume we have

a chapter of ten pages upon diseases of the bladder, which is the most unsatisfactory part of the work. It is too briefly written to be of much practical value, and yet the subject is one of greater importance to the general practitioner than any other in gynecological practice.

Dr. Edis's book does not go beyond the current ideas of etiology, pathology, and treatment. He has made no attempt to garner in the permanent form of the treatise the rich harvest of the special journals. Each author ought, however, to contribute his share to this work. The store of material is so great, that, going over the great field of gynecology, as the author of a text-book does, it is scarcely within the reach of one busy, hard-worked physician; it must, therefore, be the work of several hands, a division of labour, and very possibly a division of interest also.

2. It is a very difficult thing to understand for whom Dr. Brown wrote his *Clinical Handbook on the Diseases of Women;* judging from his preface, which is modest in its disclaimer of originality, "it is intended as a guide for the use of medical students and country practitioners," but, judged from its make-up and matter, there is no class of people in any way related to the medical profession to whom the book could be of any use. There are two pages of dictionary, in which such words as "clap," "onanism," "vulsellum," and others find place in connection with many obsolete terms. He naively describes the mammary glands as situated over the pectoral muscles, the "nipple, placed in the centre of the gland, lies opposite the fourth rib, and is surrounded by a rose-pink ring." He describes the bulb of the vagina as situated in the "upper vaginal wall near the entrance," and that it has been mistaken sometimes "for the womb." We looked with some anxiety to see if he had described the rectum with reference to a very possible mistake, which the "country practitioner" ought to be guarded against, and found that he had neglected a very manifest duty. He directs the benighted rural individual, for whom the book is written, to examine his patient upon a kitchen table, "three inches lower at the end where the patient's head lies," and then, with the aid of a little domestic upholstery, "you have an arrangement which can scarcely be improved upon." Before sitting down comfortably to examine his patient, the doctor is directed to wash his hands, and then, seated at the end of the table, we suppose, some distance lower than his patient, the left index finger explores the vagina, while the right hand makes steady pressure over what the author terms the "pubis." This, he informs us, with the dignity of italics, is called bi-manual palpation, and tells the student in four lines all that this manipulation will teach him, which we think is space enough; but, with malice directed against the peace of every inquiring mind, he tells us that it will teach "many other points only to be learned by experience." We regret to say that he neglects to direct the doctor to wash his hands at the conclusion of his examination. Now the reader may regard this last remark as a hypercriticism, and as really unkind to a not undeserving author; but if, from the above, the reader has caught an idea of how elementary the book is, that it teaches the alphabet of the easy, yet so difficult, art of gynecology, and to implant in the ancient, bucolic mind a new idea, a difficult thing to do we fancy in the opinion of Dr. Brown, the reader will perceive that the omission noticed by the reviewer is a very serious matter. In this sin of omission, touching the subject of cleanliness, *after* an examination, Dr. Brown has very good company. You might trust a bright student to his wits very

safely about making an examination, but he ought not to be trusted uninformed about protecting himself after he had completed his operation. Can the reader point out a single book where this subject is given the importance it deserves? If a gynecologist cannot afford any other religion, he will do very well if he be as near to Godliness as thorough cleanliness will make him.

Philosophically considered there are no such things as dirt and filth. They both have their place, and use, and eternal fitness. In this sense we exclude all idea of uncleanliness in the practice of the art of gynecology. We have thus cleared the way for the assertion that the practice of gynecology may be made, of all earthly employments, the most filthy. But this exists in the operator, not in the subject, or the spontaneous condition of the subject. Many methods of treatment deliberately followed by physicians are, from their nature, filthy. We know a very good man, if not much of a gynecologist, who always inserts a piece of sponge to retain a displaced uterus in position. The point, however, to which we wish to direct the attention of the reader, is the care of the instruments and hands. The hand of the gynecologist is a peculiar organ. It is the hand of the physician plus a certain spiritual quality that renders it subservient to the highest use to which the sense of touch can be applied; and in its full perfection, like the brain of the poet, is born, not made. It is not as a scientific organ that we wish to speak of it; but as a channel for infection to the owner. This has already become a serious matter. American gynecology can count a small battalion of victims, dead or maimed. Storer, of Boston, lost years of his valuable life; Thomas, of New York, had a narrow escape; Engleman, of St. Louis, has a deformed hand, with his vitality hardly yet recovered from the shock. Armsby, of Albany, carried to the grave a maimed hand, with his health shattered beyond repair; Dean, of Rochester, lost his life; and we might go on through half a page with the enumeration of these accidents. These are all cases of septic infection. And we look upon it very much as though it was a case of typhus fever which had occurred in a physician's household, something that ought to be avoided, and a disgrace because it was not. In this age, when all surgery and half of medicine are turning upon the germ theory, the person of a surgeon ought to be protected by scientific forethought and personal hygiene, for the sake of the example, if for nothing else. A matter of first importance is the care of the finger-nails and fingers; and this is not the care given to these parts by gentlemen and ladies. Fashion teaches that the skin should be forced back over the matrix of the nail, so that the small semilunar rim will show at the base of the nail, thus giving it an almond shape. This, on the contrary, the gynecologist ought to allow to grow firmly upon the nail, interposing a firm shield against the entrance of infecting material under the quick, as it is commonly called. "Hang-nails" ought never to be allowed to form, and they may be prevented by keeping the skin soft and firm. Nothing promotes a healthy skin so well as sunlight; the well-browned hand of a man, not a labourer, is seen to be soft, firm, and non-absorbent. The specialist ought not to wear gloves in summer time, except a light cotton glove, for the purpose of keeping his hands clean; or, if he drives himself, under no consideration ought he to wear gloves that will sweat the hands. These are not the rules to form a dainty hand, but the young gynecologist must understand that women go to him professionally, because they are obliged to, not because of the fit of his clothes, or the beauty of his hands.

And this part of our digression brings us back to the pleasant task of reviewing Dr. Brown's book. He tells the student to lubricate his fingers with soap and water before making an examination, and we have noticed the same direction in other hand-books. The exploring finger is lubricated for two purposes; first, to facilitate its introduction, and lastly, to protect the finger from the many forms of infection to which it is exposed. Soap and water may answer the first purpose in a very imperfect manner, but it is useless for the latter. It is quite common to use cosmoline or vaseline for this purpose; but we have noticed that the frequent use of these lubricants causes the skin to flake up and become rough. Oils are faulty, because they are liable to drip upon the clothing or floor, and lard at some seasons is too hard and liable to become rancid. A mixture of about one-third olive oil and two-thirds lard, with two per cent. of carbolic acid or oil of thyme, makes a cheap and reliable lubricant. The conditions to be met are, a material sufficiently firm and consistent as not to rub off the fingers, fluid enough to lubricate, and furnished with some unirritating antiseptic. Next, and this for the sake of the patient, comes the care of the instruments. About this Dr. Brown does not say anything, and, as for that matter, neither does Dr. Edis, or Dr. Thomas, or Dr. Emmet, or even Dr. Mundé; but the instruments require a special hygiene that is never for a moment relaxed. The expensive instruments, and those used in great operations, are, of course, properly taken care of, but the every-day instruments are those which may become dangerous to the patient. Now all this is a very serious matter, especially as we are reviewing this book for the sake of the student and country practitioner, for whom it is written, we feel obliged to tell them that it is a matter of dollars and cents. It has happened to us that a lady has applied for treatment, giving as an excuse for leaving her physician, a very worthy man, and one in whom she had great confidence, that his instruments were so filthy that she dared not trust herself in his hands any longer.

Cleanliness is a very simple matter; there is but one element in it, ceaseless watchfulness. It must be looked after to-day, to-morrow, always. In nothing is this more true than in gynecology, in which a physician may do more harm by his carelessness than he can do good by his treatment. Naturally, he uses the same lubricant for his instruments that he does for his hands, and both as a matter of course and convenience the same means are used to clean both hands and appliances. For this purpose nothing is equal to good yellow soap, kitchen soap, for the reason that it removes oily matter and other forms of impurity more quickly than any fancy or toilet soap that we have ever used, the hands are exposed to water for a shorter time, and are thus less liable to crack or chap. Since this hitherto unwritten chapter of gynecology is now disposed of, we can resume the thread of our review.

As Dr. Brown's book is not only a hand-book, but a clinical hand-book as well, this feature deserves some attention. A scientific hand-book is a short practical *résumé* of a subject for handy reference. We have a few notable instances in gynecology. Take Lombe Atthill's book, in the form of clinical lectures, which is without a peer as a hand-book. There is scarcely a formal reference to a "case" in the volume. Lawson Tait, with the finest literary art, blends any special application of a principle to a case so unobtrusively with the text, that the reader feels that no time is lost in its clinical details. Such an application of the general to the special, as is usually found in the clinical text-book, is a useless burden to

the text. Like a wood-cut it can illustrate but one or two of the general principles involved, and as cases are endless in the variety of their clinical features, they serve rather to confuse the young reader than clear up an obscure point in practice. The proper place for a formal display of case histories is in the special or general periodicals; and the proper place for the general principles established by the clinician is in the treatise or hand-book.

In the clinical hand-book under review, the clinical details tend rather to obscure than to make clear the text; but if this was their only fault, we should allow that matter to pass. A large proportion of the cases which are used is borrowed, and thus lack the graphic vividness that belongs to personal experience on the part of the writer, while some of the author's own details are impossible to understand. For instance, upon the subject of leucorrhœa, he relates the case of a girl, twelve years old, whom he examined through the vagina with his little finger, and found the cause of her leucorrhœa to be a pin, which he removed from Douglas's pouch, and this he did with his little finger, even unaided by bi-manual palpation, as practised by our author. In some cases he operates through a small bivalve speculum, which is certainly bad advice to the country practitioner. As one of the means of arresting a pending abortion, he directs plugging of the vagina by iodized wool, to arrest hemorrhage; and yet, on the next page, he gives the true result of tamponing the vagina, which is to excite uterine contractions. In this operation he directs that the plug be pressed into the anterior *cul-de-sac* and into Douglas's pouch. In several other places he confounds the posterior *cul-de-sac* with the sac of Douglas.

We have given more space to the book than it deserves. We regard the volume as a dangerous one, because the author caters to a class of inexpert readers by the style, size, and price of the book. The country practitioner is a long-suffering individual, and he deserves all the protection that the reviewer can afford him against the designs of ambitious authors. The contrast between the two volumes that stand at the head of this article is a striking one. The author of one is earnest, pains-taking, learned; his book shows labour, thought, and careful revision, and is altogether a manly work, such as one should expect from an English gentleman. The other is careless in the statements of opinion and fact, a misdemeanor on the part of one who professes to be an educator, written in obscure English, teaching false anatomy and doubtful practice. The only motive of the book seems to be an outcome of the morbid desire of the author to write a book, cost what it may to his own reputation and the well-being of his readers. E. V. de W.

ART. XIX.—*Scrofula and its Gland Diseases.* By FREDERICK TREVES, F.R.C.S. Eng., Assistant Surgeon to, and Senior Demonstrator of Anatomy at, the London Hospital. 12mo. pp. xii., 205. London: Smith, Elder & Co., 1882.

THIS is a notable contribution to medical literature for several reasons. Not only is it claimed to be the first special work on the general pathology

of scrofula which has appeared in English for many years, but the extreme prevalence of scrofula, the very misty views entertained upon the subject by many physicians, the great changes which have taken place in our knowledge of its pathology, and lastly, the admirable manner in which Mr. Treves has treated the matter, all tend to enhance the importance and value of the book.

Since the days of Phillips and Glover scrofula, after long neglect, has been subjected to special study by many observers upon the continent of Europe, and the results of that study, as well as that bestowed upon it by himself, are given to the profession by Mr. Treves in this modest-sized volume. These results are said by Mr. Treves to amount to an almost complete reconstruction of its pathology, a more distinct definition of its clinical outline, and the giving of a more distinct individuality to the disease. A book which claims to present to the profession such important results, and doctrines, is entitled therefore to the somewhat extended notice we propose to give it.

Mr. Treves attributes the illy-defined limits so often assigned to scrofula, and the opposed views entertained concerning it, to two causes. 1. The difficulty of isolating scrofulous disease from the manifestations of mere ill-health. 2. The persistent attempts to find some characteristic anatomical element for every disease. Thus one man will speak of a patient as slightly scrofulous, while another will regard struma as no less a specific affection than is cancer—the discrepancy being dependent upon the fact that the one man is a clinician, the other a pathologist. Continued observation has gradually limited the area of the condition once described as mere frailty of constitution, and has demonstrated that certain disorders are no longer to be thus classed, but are in reality specific, and dependent upon certain ascertained pathological conditions. The clinical observer who once was in the habit of regarding every manifestation of poor health as scrofulous, is now obliged to recognize some of these manifestations as the result of hereditary syphilis, and others as having their origin in rachitis. This disposition to regard scrofula as the *omnium gatherum* into which could be cast any affection without precise and definite pathological limits, has tended to discourage close histological research into its nature, and it has only been of late that such examinations have been made with sufficient accuracy, to permit of the attempt to reconstruct our theories upon the subject.

Mr. Treves's second chapter is taken up with the pathology of tubercle, and the relation which exists between it and scrofula. After discussing the very marked modifications in our knowledge of the histology of tubercle undergone of late years, and showing that the latest microscopical investigations do not permit us to assert that it presents any specific anatomical element, Mr. Treves goes on to consider what is the relation existing between tubercle and scrofula. It is shown that in a scrofulous gland the most perfect and typical primary tubercle may be met with. In cold abscesses, in lupus, and in some other scrofulous manifestations, true tubercle is found, and is known by appearing as a mass, consisting of one or more giant cells, surrounded by a zone of epithelioid cells and the whole inclosed in leucocytes or embryonic cells. But these distinctly tuberculous appearances are not found in all scrofulous diseases, and in some of them have never been demonstrated to exist at all. Mr. Treves accounts for this fact upon the supposition, or theory, that tubercle is the highest manifestation of a certain process, to which less perfectly developed disease may

never attain, and thinks it unwise to draw a fast line of distinction between tuberculous and scrofulous disease of a gland, which may altogether be a question of degree and not of difference in nature. He however thinks that it is an error to speak of a scrofulous disorder as tuberculous, even although the existence of primary tubercle may be demonstrated in the case, for the reason that certain grave consequences have become associated clinically with the title miliary tubercle, which are by no means true of scrofula. Indeed, the relationship existing between scrofula and tuberculous disease is close, and yet distinct. Primary tubercles will be found in both diseases, but the aggregation of these primary tubercles, the gray granulation of Laennec, is very rarely, if ever, found in a truly scrofulous disorder. The miliary tubercle represents the more advanced step in a process, which in scrofula is very rarely reached, caseous degeneration setting in, and cutting short the process. Thus it would be correct to regard scrofula as a milder form, or stage of, tuberculosis.

As regards the nature of tubercle Mr. Treves is not inclined to adopt the generally received view that it is a neoplasm, although it is not yet definitely settled whether of connective, or adenoid origin. However this may be, our author is convinced that it has its beginning in a peculiar form of inflammation, that it often is accompanied with inflammatory signs, and that in those cases which are scrofulous, and yet in which tubercle exists, it may proceed to suppuration and cure, as is often seen in the case of a gland. He further explains his view by a comparison of tubercle with syphilis, and thinks that as that disease is attended with the formation of gummatous growths dependent upon a peculiarity in the inflammatory process, so tubercle follows a peculiar inflammation and is properly an inflammatory neoplasm.

Chapter IV. discusses the subject of the inoculability of tubercle. In it many recent experiments are detailed and criticized, and the conclusion arrived at that nothing is as yet definitely settled. Hitherto our attention has been fixed upon tubercle, the anatomical ally of scrofula, now, in Chapter V. we come to scrofula proper, and a carefully studied definition of it. The whole chapter is devoted to an examination and exposition of the definition given, which may be summarily described as a tendency to inflammations of a peculiar type, usually chronic, induced by slight irritation, and prone to continue after the removal of the irritation. There is also a marked tendency in the disease to spread locally, and to involve lymphatic tissue. In this vulnerability of lymphatic tissue we have the most distinctly characteristic trait of scrofula, and recent experimenters and microscopists seem very generally to unite in attributing to it most of the well known scrofulous manifestations. The whole chapter is an interesting study, but we are obliged to content ourselves with this brief summary of its contents.

In the next chapter Mr. Treves considers the relation existing between scrofula and phthisis, and the antagonism existing between scrofulous diseases. Here, also, he goes largely into the conflicting views and theories entertained by competent observers, through which we shall not attempt to follow him, confining ourselves to a statement of his own opinions, which are very clearly given. Mr. Treves believes that scrofula and phthisis are due to the same morbid process, that the morbid action is identical, and the same, in the two diseases, and that phthisis may be regarded as scrofula of the lung, and a scrofulous lymphatic mass as phthisis of a

gland. He thinks this opinion is proven to be correct by the facts that the two diseases occur in persons of the same habit, that the same causes, as measles, predispose to both, as pointed out by Ruehle and Thaon, and that they seem to be mutually associated hereditarily.

Mr. Treves further points out that the definition given of scrofula applies almost equally well to phthisis, that the histological resemblance between the two affections is also very close, as is shown by the researches of Niemeyer, Ruehle, Rindfleisch, Grancher, and Klein, and finally that the two diseases occur sometimes in the same individuals.

While thus maintaining the identity of scrofula and phthisis, Mr. Treves thinks that the comparative rarity of instances in which both diseases appear in the same person, is accounted for by the fact that there is a decided antagonism between scrofulous diseases of all kinds, and that the occurrence of one scrofulous manifestation prohibits the appearance of another. That this is a fact most surgeons will admit, and the author of this book cites some extended observations made by him at the Margate Infirmary in its confirmation.

Chapter VIII. is concerned with the etiology of scrofula. Premising that it may be either hereditary, or acquired, the first place among the determining causes of scrofula is given to phthisis in the parents. Mr. Treves does not think that we can safely accept the statement frequently made that phthisis in the father exerts a more deleterious influence upon the offspring than does the same disease in the mother, but, on the other hand, his observations lead him to think that scrofula in the mother is more influential as a cause than where it exists in the father. Having given scrofula in the parents the second place among the hereditary causes of scrofula, Mr. Treves goes on to consider the influence of poor health, and, more especially, of syphilis, in the parents, and thinks that while we may often be in doubt concerning the influence of the former, we must admit the power of the last. Considerable space is also given in this chapter to the other predisposing and exciting causes of scrofula, and the pleasing conclusion is reached that the disease has undergone a diminution in frequency of late years by improvements in sanitary science, the improved condition of the poor, "and by advances, possibly, in the science of medicine, and in the treatment of disease."

It will be noticed that Mr. Treves bestows very faint praise upon his own science in the words we have just quoted, and it certainly seems to us that he errs in so doing. The improved sanitary condition, of which he appears to entertain no question, is very largely a triumph of medical science, and it is but one of the triumphs which mark the progress of medicine. It is a mistake to think that that progress has been small because we are confronted by many diseases we cannot cure. In the last fifty years the accumulations of exact knowledge have been many, and the application of principles deduced from observations, to the cure and prevention of disease, have been neither few nor insignificant. We, therefore, think that Mr. Treves might well venture to claim a little more for our science.

In Chapter IX. "the scrofulous individual" is surveyed *in extenso*, and the whole range of pecularities and characteristics which go to make up that oft described personage, are given in detail. The most recent contributions to this subject have been the typical portraits exhibited by Dr. Mahomed and Mr. Galton at the International Congress of 1881, and which have since appeared in the Reports of Guy's Hospital for the same

year. In his survey of "the scrofulous individual" Mr. Treves passes in rapid review the whole series of scrofulous manifestations—manifestations which are by no means to be found in any one person, but are recognized as scrofulous whenever they appear in any individual—and he thus presents a general descriptive account of the appearances of the disease itself as commonly seen.

The second part of Mr. Treves's book deals with scrofulous glands. It is the most important, and of most interest to surgeons. A preliminary account is given in Chapter X. of the anatomy of the external glands, which is of much importance, as bearing upon the regions from which they individually receive lymph vessels, and thus enabling the surgeon to look intelligently for the seat of the irritation, which has been the exciting cause of the mischief. Especially is this shown to be important in view of the statements contained in the next chapter, that in almost every case some exciting cause can be discovered to have induced the gland disease. Mr. Treves, while not denying that cases occur in which this exciting cause cannot be ascertained, inclines to the opinion that such a condition only exists from defective or deficient knowledge. He takes issue with Dr. Allbutt that a scrofulous gland can arise from a local cause without an already existing predisposition, and maintains that the tendency is an essential element in the case. After citing some instances which go to fortify his opinion in this matter, Mr. Treves proceeds to the consideration of the local lesions which induce gland disease. These are numerous and do not need recapitulation here. But there is one important statement made while speaking of the very great preponderance in the number of cases of cervical adenitis, which it is well to emphasize. Mr. Treves accounts for this preponderance upon the ground that "the peripheral lesions most active in exciting gland disease in scrofula are those that are located in the adenoid tissue of a mucous membrane," and that this adenoid tissue, while existing in most of the mucous membranes, is found in much the greatest amount collected about the mouth and pharynx, forming in the latter the largest masses of such tissue in the body, viz., the tonsils. Adenoid or lymphoid tissue is also plentiful in the bronchial and intestinal mucous membranes, and we accordingly find that the cervical, the bronchial, and the mesenteric glands are those most frequently affected, in close correspondence with the amount of adenoid tissue existing in their immediate neighbourhood.

In Chapter XII. are detailed the pathological changes observed in lymphatic glands. The first change noticed in a gland taking on diseased action is an increase in the number of the lymph-corpuscles, both in the sinuses and in the gland tissue proper. The origin of these corpuscles is as yet under debate, their presence having been variously accounted for, it having been variously suggested that they are derived from some initial inflammatory lesion, that they are leucocytes from the neighbouring blood-vessels, or that they originate by proliferation of the existing cells.

Contrary to the frequently made statement that this accumulation of cells first occurs at the periphery of the gland, Mr. Treves says that it invariably begins at the centre, in the deeper or medullary portions of the gland.

The next change noticed is the appearance of spots, which, upon closer scrutiny, are found to be occupied with very varied cellular forms, from lymph corpuscles to the large cells with glistening protoplasm first observed by Rindfleisch, and regarded by him as characteristic.

When the progress of the disease is acute, after various other alterations, spots of opaque tissue appear, and go on to complete caseous degeneration. When, however, the disease is less acute, there is a much more prominent development of fibrillar elements, and the proper adenoid tissue, the reticulum within the sinuses, is more extensive and dense, and giant cells appear in the opaque patches which form. These giant cells are well known to observers, and in the opinion of Mr. Treves are lymph-coagula involving in their coagulation various cell-elements. As the reasons for this opinion the author claims that the position of these cells is probably in the lymphatic sinuses of the gland, although this is not always apparent, owing to the rapidity with which the anatomical details of the part are lost. They precisely resemble the giant-cells sometimes found in chronically inflamed connective tissue which occupy the lumen of lymphatic vessels; then at the time of their advent a material precisely similar to coagulated lymph appears throughout the gland.

We have not space to follow our author any further in the pathological details of gland disease; they have been made public in his lectures at the College of Surgeons, in March, 1881, and are given minutely in this volume. His descriptions are also made much plainer by the plates at the end of the volume, prepared by him for an article to appear in the forthcoming new edition of Holmes's System of Surgery.

Chapter XIII. deals with the symptoms and diagnosis of scrofulous lymphatic glands. Mr. Treves draws attention to the fact that glandular enlargements are not generally symmetrical, but an exception to this rule is sometimes observed where the enlargement depends upon hypertrophied tonsils. In these cases symmetrically placed glands can often be felt at the level of the hyoid bone. The progress of the disease in glands is very uncertain, and, where several are involved, the rate of progress may be very different in them. Resolution may occur at various stages and in very different kinds of glands, but it is most rare in those cases where a whole chain of lymphatics is involved, and where well-developed tubercle is revealed by the microscope. Suppuration is a very general result, but it is difficult to decide the proportion of cases in which it occurs, on account of the very slow progress of the disease, extending, as it often does, through many years. In 131 cases, obtained from the records of the Margate Infirmary, suppuration occurred in 93 instances. When suppuration does occur it may be either in the gland itself, or in the connective tissue around it. It is important to distinguish between these two kinds of abscess. When situated in the gland tissue it yields a caseous pus, whereas, when located in the surrounding tissues, it will be healthy and laudable; but, in either case, the abscess will continue to discharge until the whole of the diseased gland is gotten rid of. Often, when the gland has been removed, either with or without surgical interference, another gland may appear and take on similar action, and the whole tedious process be gone through with again. Injurious pressure is sometimes exerted by enlarged gland masses. This is most common in the mediastinal glands, but is sometimes, though rarely, seen in connection with cervical masses. Leucocythæmia is a very rare complication. Mr. Treves says but little upon the subject of diagnosis, and thinks there is little danger of confounding a scrofulous gland with anything but the tumours connected with Hodgkin's disease, from which it is readily distinguished, however, by the more rapid progress made by the latter. Yet the matter is not always so simple. The writer of this review recently removed a gland from beneath the angle of

the jaw, which was solitary, round, the size of a bantam's egg, and with such a sense of tense fluctuation, that he was quite uncertain whether it would turn out to be a gland or a cyst.

Chapter XIV., and last, is occupied with the treatment of scrofulous lymphatic glands, and contains very little that is new. Indeed, the therapeutics of scrofula are altogether out of proportion to its pathology. The latter may be unsettled, but about the former there is not much difference of opinion. Improved hygienic surroundings, sea air, iron, and, above all, cod-liver oil, are the general remedies upon which the most reliance is deservedly placed. Iodine, once so highly lauded, has not preserved the reputation it once enjoyed. Yet that the syrup of the iodide of iron is a valuable preparation is admitted by Mr. Treves, and it would shock many among us were its virtues called in question, but how much the iodine in it has to do with its efficiency may well be doubted.

In speaking of improving the hygienic surroundings of the poor, Mr. Treves makes the suggestion, whether the institutions whose wards are crowded with confirmed cases of scrofula, would not accomplish more good if the lighter cases, those in which the taint is less deep, were received instead. He seems to think that it would be wise to aim more at utilizing their advantages for prevention, than at ameliorating and improving the condition of hopeless cases.

Mr. Treves's advice, concerning local treatment, is excellent. He lays much stress upon the importance of removing any ascertained cause of irritation. Particularly should the condition of the mouth and pharynx be examined into in cases of cervical adenitis, and he advises that where enlarged tonsils exist they should be at once removed. An enlarged gland should be regarded as evidence of some mischief existing elsewhere, and a careful search should always be made for it. The indiscriminate and long-continued use of poultices is condemned. Early exit should be given to pus. It is a great mistake to allow large accumulations to take place. Mr. Treves condemns the external application of iodine in the early stages of gland disease, when the process is comparatively active, but thinks it is often of value when the disease is far advanced, and extremely indolent. When he uses it he relies upon the *unguentum plumbi iodidi* rubbed into the part, morning and evening.

With regard to operative interference, Mr. Treves thinks that when the tumour can be easily and safely removed it is well to do so, thus getting through rapidly with that which nature, unaided, is very long in accomplishing. He thinks it is advisable to operate when the tumour is solitary, superficial, and without adhesions; when, though these are many, they have increased without pain, are limited and few; and finally, when a single fairly movable gland is exerting injurious pressure upon neighbouring parts. Mr. Treves has seen no ill effects follow from operations thus selected, and thinks we can dismiss all fears of exciting a fresh outbreak of the disease thereby.

If the tumours will shell out easily the operation is simple and very satisfactory, but should the operator find the adhesions firmer, or the number of glands much greater, than he anticipated, it is much safer to do too little than too much.

Scooping out the gland by means of a Volkmann's spoon, inserted either through a sinus or a small incision, Mr. Treves regards favourably when the gland is fixed, and there is, therefore, no risk of a part of its contents

escaping into the cellular tissue. When in these cases a deep cavity is left, a drainage tube should be inserted.

The puncture of a scrofulous gland by a cautery, the size of a No. 7 catheter, Mr. Treves thinks, is one of the best measures at our disposal. He has practised it repeatedly and very satisfactorily. The cautery is thrust through the skin and into the body of the gland in several directions without removal, thus making but one opening in the skin.

If pus or cheesy matter follows the removal of the iron, a poultice is applied, but if none such makes its appearance, a simple dressing is sufficient. Our author thinks it is simpler than scooping, and much preferable. How it acts he does not know, but Mr. Treves is satisfied that it favours speedy resolution, which, in cases where no cheesy matter escapes, is accomplished in from fourteen to twenty-one days.

Of interstitial injections, Mr. Treves has a rather poor opinion, nor is he more in favour of treating diseased glands by setons, electricity, crushing between the fingers, subcutaneous laceration by a cataract needle, or long-continued compression.

For the evacuation of gland abscesses he strongly recommends the use of the actual cautery, rather than by the limited incisions usually employed. He opens the abscess by a fine cautery, and allows it to empty itself. Should discharge continue for an undue period, he makes a larger opening into it, and if a gland mass is found projecting into the cavity he punctures that also with the hot iron. Where persistent sinuses result, Mr. Treves treats them upon general principles, and reminds his readers that one of these is rest. He, therefore, advises that where the neck is the seat of the disease, an attempt should be made to restrain its movements by a gutta-percha stock, extending from the occiput and lower jaw to the chest and shoulders.

We have now followed Mr. Treves to the conclusion of his work, and, in taking leave of it, must repeat the favourable opinion we expressed of its value when we began. While there is room for some condensation and a better arrangement of the pathological portion of the work, it cannot be doubted by any one who carefully studies this book that medical literature has been a gainer by its publication. It is not a book to be read hastily, but will repay a close perusal. The plates appended are good, and help to make clear Mr. Treves's descriptions of the pathology of scrofulous glands.

S. A.

Art. XX.—*A System of Surgery, Theoretical and Practical, in Treatises by Various Authors.* Edited by T. Holmes, M.A. Cantab. First American from Second English Edition, thoroughly revised and much enlarged, by John H. Packard, A.M., M.D., assisted by a large corps of the most eminent American Surgeons. In three volumes. Vol. III. Philadelphia: Henry C. Lea's Son & Co., 1882.

When Dr. Packard, hardly more than eighteen months ago, called upon his American colleagues to aid him in the revision of this important work, few would have believed that so prompt and expeditious a response could possibly have been made. But little more than that amount of time has

been occupied between the distribution of the work, and the completion of the three capacious double-column volumes. Such enterprise as this is in amusing contrast to the stolid German method, which plans and sets agoing a most comprehensive handbook or system without any well defined notions on the part of the originator as to the prospect of its being completed during an ordinary lifetime. Brilliant as are the achievements of Germany and other Europeon nations in the domain of science, it is evident that the practical character of the Americans enables them to put the work that has been accomplished before the world in its most available and desirable form. Surely few tasks could be more difficult than the attempt of Dr. Packard to renovate by transfusing the life blood of the last decade of medical science into a body from which the freshness of youth has departed. We must confess that it has been accomplished more satisfactorily than we believed possible, in spite of the undeniable fact that the wrinkles are here and there unpleasantly conspicuous.

The present volume is divided into six parts. Regional surgery is concluded in the first part, disease of the joints, bones, and orthopedic surgery come next: there is a short section devoted to the nervous system, another to gunshot wounds, another to operative surgery, and part six brings up the rear with a miscellaneous collection of subjects, among which we notice an entirely new article on the skin by Dr. Van Harlingen, of Philadelphia, and one on hospitals, and the valuable appendix by Dr. Norton Folsom.

The book opens with an article on Diphtheria and Croup, in which the old views on the non-identity of the two diseases are left untouched by the American reviser. The former is likened in its febrile character and epidemic influences to scarlet fever, while the latter is regarded as an inflammation of the air passages attended by the exudation of a false membrane. It should be remembered that it is a matter of no small practical importance to establish a well-formed professional opinion on this question, as it is the custom of many elder practitioners to look upon croup as a non-contagious disease. Whether or no the type of "old-fashioned croup" ever existed as described in the text-books, certain it is that few practitioners of middle age are able to identify it with what has been observed in their own experience. The article on Diseases of the Larynx is, we should say, rather medical than surgical, and the arrangement of the book which separates injuries from diseases obliges the reader to refer to the first volume for what is to be said on tracheotomy.

The chapter on the Thyroid Gland seems to us altogether unworthy of such a book as this. The able contributions of Virchow and others to the anatomy and etiology of goitre, and the success of Billroth, and indeed of surgeons in all countries where the disease is at all frequent, in operations for extirpation of the tumour, have placed the surgical aspect of this gland on a footing which requires a thorough revision of the original article. The brief notes which the reviser, Dr. Cohen, has made refer chiefly to experience in treatment in his own practice, which have been confined chiefly to local applications. On the other hand, the succeeding article on apnœa is excellent, we might almost say classical. Considerable prominence is given to the Marshall Hall and Sylvester methods which have always seemed to us awkward and complicated ways of doing what may be easily and simply effected by manual compression of the thorax. In the hands of excited and inexperienced persons they would be worse than useless, tending as they do to invest a very simple act with the complica-

tions of a difficult operation. We notice one very important omission in the rules of treatment in cases of impending death by apnœa given by the Royal Humane Society, and that is that success has often rewarded the efforts of hours. This fact cannot be too strongly impressed upon the public, for we have little doubt that even at the present time, after all the attempts which have been made to educate the public, cases are constantly abandoned as hopeless which might be restored by persevering efforts at resuscitation.

Diseases of the bones, joints, and spine, and orthopædic surgery form the greater portion of Part II. Dr. Markoe has had a difficult task in the revision of Holmes's article on diseases of the bones, which, like most English work on pathology, partakes of the character of a bygone period in medical literature. This is strikingly shown in the part devoted to malignant tumours of bone, where the reviser has made extensive and judicious additions, borrowing largely from Dr. S. W. Gross's excellent summary of modern news on that subject. Mr. Holmes appears to much better advantage in the chapter on excisions of bones and joints, which follows a department in which English surgeons have justly achieved distinction. The author correctly says of Lister's operation of excision of the wrist that it is one of the most tedious and difficult in surgery; our own experience favors the much more simple method of lateral incisions so made as to avoid the vessels, and to do the minimum amount of injury to tendons. These should be modified so as to adapt themselves to existing wounds of sinuses. The real obstacle to future usefulness of the hand after this operation is the shortening of the metacarpal bones, thus making subsequent motion at the metacarpo-phalangeal articulations difficult. We are inclined to agree with Mr. Holmes's view that "many cases will terminate quite as well if judiciously treated by incisions when necessary, the removal of portions of bone as they become loose, and above all the constant and persevering use of passive motion to the fingers." Excision of the hip is not regarded with favour, but Dr. Bradford in the succeeding article on disease of the joints shows that much better results have been attained during the last ten years than formerly. Excision of the ankle-joint is an operation which has never attained much popularity. So distinguished a surgeon as Langenbeck has, however, been one of its enthusiastic advocates, but his experience has been chiefly confined we presume to traumatic cases, in which it is pretty generally conceded that satisfactory results may be obtained. The author has failed to note the success of this operation in disease during the period of childhood. On the other hand, it should not be forgotten that Sayre has obtained most excellent results with conservative treatment, which, however, is perhaps better adapted to disease of the tarsus than the ankle-joint proper.

The revision of the articles on Diseases of the Joints, Spine, and Orthopædic Surgery has been undertaken by Dr. E. H. Bradford, whose additions, although necessarily brief, are all judiciously made. The statement of present views on the treatment of diseases of the hip and spine are favourable examples of his work, which has greatly increased the value of these chapters. In the article on Orthopædic Surgery, or, as the reviser would have it, "Orthopedic," we notice some remarks on the treatment of inveterate cases of club-foot by excision of a wedge-shaped portion of the tarsus. The bony prominence or hump, which is usually marked in these cases, and is the chief obstacle to the maintenance of a good position, is thus removed, and the foot comes readily into place with

most satisfactory results, as any one who has had an experience with this operation will, we feel sure, testify. Dr. Bradford has also added some remarks on osteo-clasis for curvature of the bone, in which he and some of his colleagues have achieved much success.

Part IV. is devoted to Gunshot Wounds. The original article, by Thomas Longmore, the Professor of Military Surgery at Netley, is one of the classical contributions to this subject, and is doubtless familiar to the readers of this Journal. The reviser of the present edition is Dr. Hunter McGuire, who had a large experience in the Confederate army during our late war. We regret to find, however, that he has not been able to avail himself of the experiences of the Southern armies, of which the world has as yet heard little or nothing, but has relied almost exclusively upon the Surgical History of the War for his additions to the text.

Part V. deals with Operative Surgery, including, as it should, anæsthesia. This article is of unusual interest, giving, as it does, the contrasts of opinion which a decade has brought about. In the original English article chloroform is of course given the first place—the writer prefacing his remarks upon this agent by the statement that "sulphuric ether is still extensively used as an anæsthetic in the United States; but in Europe chloroform is generally preferred to it." Dr. Reeves, the reviser, shows the change of opinion, not only in Europe but in this country, in a striking manner. Ether, he says, is now used exclusively in at least one-third of the hospitals in Great Britain, while there is shown a general disposition of the profession in that country to abandon chloroform for ether. In this country he finds that "some strongly-marked geographical lines can be drawn." All New England surgeons use ether. In the cities of New York, Brooklyn, and Philadelphia, there are thirty-six surgeons who use ether, three who use either agent, and only two who use chloroform exclusively. The remainder of the country may be divided into two sections, North and South, by a line running west between Maryland and Pennsylvania, and along the Ohio. North of this line the figures are roughly thirty-seven to twelve in favour of ether, while on the southern side they are in favour of chloroform twenty to twelve. A note by the editor, Dr. Packard, on the "Primary Anæsthesia," first described, we believe, by himself, concludes the article.

The descriptions of operations are sufficiently explicit, as a rule, and the illustrations are of a sufficiently high order of excellence. Dr. Packard has appended a note on trephining, colotomy, and excision of the rectum. These are doubtless intended to fill out the list, but as these operations are described more at length elsewhere, we think their brief notice at this point is misleading, in spite of the requisite references. The directions for colotomy are, moreover, inexact, and, as to some points, incorrect.

The concluding department of the volume and work is composed of a miscellaneous collection of subjects, some of which are in their appropriate places, while others were evidently the stragglers in the original act of publication.

We are disposed to sympathize strongly with the reviser of Birkett's article on Diseases of the Breast. As might be supposed, the value of such an article depends chiefly upon the thoroughness with which that part relating to the surgical pathology of the breast has been made to correspond with modern views. Dr. McGraw has succeeded in giving a very excellent summary on these points in the brief space which has been

allotted to him. We could have wished that this article, like the one which follows on Diseases of the Skin, had been entirely rewritten.

Dr. Van Harlingen has attempted to cover the entire ground in this specialty, rather than to confine himself to such portions as belonged strictly within the domain of surgery. Due attention has been given to the practitioner's wants, the text being well filled with directions for treatment and prescriptions. The article on Eczema occupies considerable space, as it should, and seems to us a most valuable one for reference. There are some interesting cases of neuroma cutis, with illustrations of the microscopic structure reproduced from Duhring's book, but we do not find mention of the investigations of Recklinghausen on this subject which have recently appeared. We notice the use of the term anthrax in connection with carbuncle, instead of malignant pustule, where it rightly belongs. The author, we are glad to see, is in favour of the use of the dermal curette, but does not urge it sufficiently strongly in epithelioma. Its advantages in the superficial forms of this disease, over the knife, are great, in that it saves the greatest possible amount of healthy tissue; but it is usually necessary to follow up its use with caustics, or the cautery. Caustics alone should only be used when it is quite certain that the entire disease will be reached by the agent, otherwise the portion left is likely to be stimulated into an unnatural activity. Dr. Van Harlingen has had the good taste to quote from American authors, when possible, and it is gratifying to see how much work has been accomplished by them since dermatology became a recognized specialty in this country.

The articles on parasites and venomous insects have been entrusted to Dr. Leidy, whose additions are confined to the former. We notice some interesting remarks on the introduction of the guinea worm through drinking water; also a description of the filaria sanguinis, and the long list of diseases ascribed to it. It seems that the mosquito is supposed merely to transfer the worm to water, from which those drinking it become affected.

The article on the Surgical Diseases of Childhood, which originally appeared in the appendix, was written by Messrs. Holmes, Broadhurst, and Shaw, and is now revised by Dr. Samuel Ashhurst. It was probably added by the editor to fill out certain deficiencies which became apparent as the successive volumes appeared. We do not think such a subdivision of any special practical value, and we can readily see, and, indeed, have personally experienced the disadvantage to the reader, who is unaware of this unusual arrangement. The account of malformation of the rectum and anus, for instance, which is particularly well given, might easily be overlooked by one who naturally seeks for such information under diseases of the rectum. The illustrations of this subject are, by the way, of unusual interest, figure 953 showing the so-called paradox of M. Huguier, or the position of the sigmoid flexure in the right groin of an infant, on whom colotomy had been performed in the left groin. The reviser has found extremely few additions to make. The next article on Surgical Diagnosis and Regional Surgery is also, in our opinion, one of those articles which few read and no one refers to. There are a certain number of topics which it should be the duty of the editor to look out for, and to work in the text in their appropriate places. The few instruments described, as the clinical thermometer, the sphygmograph, could easily be inserted elsewhere, and as the whole System is arranged on a basis of regions, we fail to see the *raison d'être* of a special article on that subject.

The closing chapter on Hospitals has been enriched by a very valuable

paper by Dr. Norton Folsom, who was one of the gentlemen selected by the Trustees of the Johns Hopkins Hospital, to prepare the volume on Hospital Construction and Management. The reputation made by our countrymen during our late war has been well sustained by the progress made in the construction of our civil hospitals since. The remarks on the site and drainage of hospitals show how high an estimate is placed upon a proper attention to those parts of the building which do not appear above the surface, and impress also upon the reader how much we still have to learn about these vital problems. Dr. Folsom's remarks on the form of hospitals are specially interesting, as embodying the views of those who have made a study of recent improvements. He says of the present popular method: "Those who consider some sort of pavilion plan the only justifiable method of construction, are by no means agreed as to whether they should consist of one or two stories." The merits of each plan are briefly and clearly stated. A good word for the now popular training-school for nurses, and on the importance of placing a medical man in the position of superintendent, who, as he quotes Dr. Billings, should be the health officer of the hospital, closes the volume. J. C. W.

ART. XXI.—*Annual Report of the National Board of Health*, 1879. 8vo. pp. 477. Washington: Government Printing Office, 1879.

THE first annual report of the National Board of Health, recently issued from the Government printing office at Washington, is a bulky volume of 477 closely printed pages, containing a vast fund of useful information upon some of the most important sanitary topics of the day.

The publication of this report marks an era in the history of sanitary legislation in the United States. It chronicles the birth of an organization of which there has long been a pressing need, as indicated by the hearty response and strong coöperation with which it has met from all parts of the country and by the eager confidence imposed in it by the people, and which bids fair to become a mighty power in the land for good, not only by the judicious exercise of its functions of investigating the preventable causes of disease, accumulating precise information, and disseminating the best knowledge and advice upon all subjects relating to public health and hygiene, but also by the performance of important services in connection with the administration of sanitary law. It has already established its claim to usefulness by its active and practical efforts in systematizing and regulating inland and maritime quarantine practice, according to the most advanced knowledge on the subject; by giving warning and advice and furnishing aid in times of public peril; by encouraging and coöperating with State and local movements in the interest of public health; by the methodical pursuit of scientific investigation of sanitary questions, of individual, local, and national importance; by its strenuous efforts for the attainment of uniformity in sanitary legislation, organization, and practice, especially in the methods of collecting and reporting vital statistics; and by the establishment of a weekly bulletin as a medium of diffusing information.

In scanning the report one is impressed with feelings of surprise and

gratification at the amount, diversity, and importance of the labour performed by the board during the brief period of its first year's existence. These results could hardly have been expected had not its members been well qualified for the duty by previous special training.

The volume consists of the report proper, which is a brief and concise statement of the operations of the board during the year 1879 under the provisions of the Acts of Congress of March 3d and June 2d of the same year, and of a series of voluminous reports and papers, mainly by experts, upon subjects wisely selected from among those claiming the earliest consideration and investigation. The reports and papers, which are elucidated by numerous maps, charts, and diagrams, are grouped together under proper headings and arranged in the form of appendices. These constitute the main bulk of the volume.

Appendix A refers to the organization of the board under the Act of Congress, approved March 3, 1879.

Appendix B contains the preliminary report of the Havana Yellow Fever Commission, consisting of Dr. S. E. Chaillé and Col. T. S. Hardie, C. E., of New Orleans, Dr. John Guiteras, of Philadelphia, and Surgeon George M. Sternberg, U. S. A. It consists of forty pages of closely printed matter and statistical tables, and is replete with information, which, though not really novel, will be of great value in arriving at a better understanding of the history, causation, endemicity, and mode of propagation of yellow fever in the island of Cuba, and the means of preventing the introduction of the cause of the disease into the shipping at Cuban ports.

The report embraces a study of the principal ports of Cuba and of their commercial relations to the United States; the endemicity of yellow fever in Cuba, and the causation of this endemicity; the means of improving the unsanitary conditions of Cuban ports, and the measures which can and should be adopted to prevent the cause of yellow fever from affecting the shipping at Havana, Matanzas, and other Cuban ports, and its transportation to the United States. The results of a series of investigations are presented, which were undertaken with the view of shedding light upon the obscure subject of the causation of this disease. They are detailed under the heads of examination of the blood in yellow fever, experiments upon animals, culture experiments, examination of the water of the harbour, and examination of the air. A brief synopsis of morbid anatomy and pathological histology, and a report by Dr. Chas. Finley, of Havana, on the increased alkalinity of the atmosphere during the prevalence of yellow fever, complete the subjects of the report.

It may be considered as established, that yellow fever is endemic in the Island of Cuba, the history and evidence showing that it has been persistently prevalent in Havana every year since 1761. Strong evidence has also been brought forward to disprove the theory of the spontaneous origin of the yellow-fever poison on board ships, and also to prove beyond question that this poison is on the shore and not in the water of the harbour. The chief thing to be done is to eradicate the disease from Cuban ports, but in this matter the United States has no jurisdiction. The main dependence must, therefore, be placed in palliative measures, such as the application of means to prevent the introduction of the cause of yellow fever into the shipping, and of eradicating the poison after it has been communicated to vessels, and of preventing such vessels from being sources of infection to other shipping and places. In pursuance of this object Congress passed the law of June 2, 1879, elsewhere noticed, which, if it had been per-

mitted to be enforced, would have been a most important, progressive step toward the solution of this latter problem. This measure was rendered inoperative through the non-concurrence of the Spanish Government, and now an effort is being made to secure an agreement, among all maritime nations interested in the enforcement of the act, upon an international sanitary code; or, if this be not at once practicable, then, at least, upon the establishment of an international system of notification as to the sanitary condition of ports and vessels.

Appendix C contains a preliminary report by Prof. Ira Remsen, of Baltimore, of an investigation concerning the best method for determining the amount of organic matter in the air, which is of some special interest.

Next follow two valuable reports, contained in Appendices D and E; the one by Prof. C. Lewis Diehl, on the Deteriorations, Adulterations, and Substitutions of Drugs, to which a bibliography is appended; and the other by Dr. R. C. Kedzie, on the Adulteration and Deterioration of Food. Prof. Diehl's report covers sixty pages, and includes tables showing the principal inferiorities of drugs, such as adulterations, substitutions, etc., recorded in the current literature of the United States during the past twenty-five or thirty years; the causes of such inferiorities; and also a fragmentary list of drugs rejected at the different custom-houses since 1848. There is also contained in the report a draft of a proposed law to regulate the practice of pharmacy and the sale of poisons, and to prevent the adulteration of drugs and medicines.

On the authority of Dr. M. I. Bailey, special examiner of drugs, nearly one-half of the drugs imported into New York before the year 1848 were of a worthless description. In that year Congress passed a law regulating the importation of drugs, and designed to exclude inferior and sophisticated drugs and medicines, which operated remarkably well during the first five or six years of its application. Subsequently, however, its execution, from one cause or another, became more or less inefficient and inadequate at various periods of its existence, and, had not the powerful influence of the American Pharmaceutical Association been persistently exerted in directing attention to abuses connected with the execution of this law, and in shaping the condition of the drug market, the law in all probability would, practically, have become a dead letter. As it is, there is the greatest room for improvement, and a careful revision and extension of the law are greatly needed, as Prof. Diehl has amply demonstrated.

While the Government can, to a very great extent, ameliorate the abuses in the drug trade by preventing, or reducing to a minimum, the introduction of inferior drugs and medicines from abroad, and by exercising a general supervision over commerce in such articles, it is powerless to reach the inferiorities that are produced at home. Says Prof. Diehl: "Congress has no power to pass a general law bearing upon this subject that shall have equal application in all the States." In this country, measures which shall restrict and prevent the sale of impure and adulterated drugs at home "must necessarily be enacted by the legislatures of the States to which they are to apply, and will be effective throughout the United States only if uniform action can be had in this direction in every State."

Many States have laws upon the subject which are very imperfect, and more or less obscure, and lack suitable provision for their enforcement; therefore, they are, in great measure, inoperative.

What is needed is uniformity of action throughout the United States,

and if, as suggested, the General Government were to enact a law for the District of Columbia, similar to the rough draft of a proposed law prepared by Dr. Squibb and presented with this report, to serve as a type for similar enactments in the different States, the proposed end might be accomplished. Independent of legislative enactments, the greatest good is being accomplished by the use of moral and educational means, such as have been employed by the American Pharmaceutical Association and kindred organizations. Both of these forces are required to effectually modify or prevent adulterations in drugs and food.

Dr. Kedzie's report relates solely to the discussion of the subject of the deterioration and adulteration of the principal substances used for human food in the United States. If we mistake not, the investigation of the general subject of these reports has been continued by the National Board of Health, and the results obtained have formed the basis for the elaboration of a proposed law which has been freely indorsed throughout the United States by men specially qualified to judge of the subject, and is now awaiting the action of the National Assembly, having been favourably reported, with some amendments, by a Congressional committee.

The next appendix, marked F, contains a report by Prof. James Law, of Cornell University, on the Diseases of Domestic Animals; and one by Dr. T. S. Verdi, of Washington, on Cattle Disease in Relation to the Health of Man and in Political Economy. Prof. Law considers briefly in his report: 1st, such animal diseases as determine specific and communicable disorders in man; and 2d, the affections of the domestic animals which are not communicable to man, but are transmissible from animal to animal, so as to constitute veritable plagues which tend to undermine our agricultural prosperity. He shows how highly important it is that the functions of the National Board of Health should embrace a superintendence of the sanitary condition of the domestic animals. For this object he advises that there shall be associated with the board one or more veterinarians, whose special duties shall be to consider all matters in which the health of the lower animals affects man; "to advise as to the enactments and administration of State laws for the prevention and extinction of plagues and parasites common to man and animals; to conduct experimental researches into the source, propagation, and extinction of these disorders and parasites of animals, and to act when necessary in an executive capacity in the exclusion or control of these scourges." He also recommends that the subject relating to "the exclusively animal plagues and the parasites that affect animals only should be committed to an organization drawn from stock-owners and the veterinary profession;" and that the whole question of animal sanitation be thus placed under the direction and supervision of the National Board of Health, as the most economical, efficient, and satisfactory medium of conducting this important service.

In the discussion of the subject of cattle disease in relation to the health of man, and in relation to political economy, Dr. Verdi points out some of the common sources of danger to health from the consumption of diseased or unsound meat, and also the immense loss these diseases entail upon one of the most important industries and sources of wealth of the country; and he proposes a plan for a national organization for the prevention of cattle disease and the sale of unwholesome meat. The Government has undoubtedly a great duty to perform in regard to this matter, and it is creditable to the National Board of Health to have agitated a subject of such vast national importance, and which hitherto has been too much neglected.

A very brief preliminary report upon the Gauging of Sewers, by Col. Waring, of Newport, R. I., will be found in Appendix G. The object of the investigation is, as stated by Col. Waring, to determine the pipe capacity needed for the discharge of domestic sewage. The investigation, so far as it has progressed, has developed results which tend to sustain the view, that a system of sewers in which the sizes are adjusted to the removal of foul wastes only, is preferable from a sanitary point of view, and is likewise more economical. As Col. Waring promises to furnish an exhaustive report upon this subject, it will be judicious to withhold further comment until after its publication. We may remark, however, that upon the results of this investigation has been based the recommendation of a scheme for the sewerage of Memphis, which has been put into practical operation, whereby it has been estimated there will be a saving of $275,000 on the first cost, in comparison with sewerage works constructed in the usual manner. The verdict of time will be awaited with much interest.

The next Appendix, marked H, is devoted to Schedules of Questions for a Sanitary Survey of Hudson County, N. J., and Bayonne, N. J. It covers sixty-eight pages of the report, and comprises questions and answers, tabular statements, statistical records, and some illustrations; the whole furnishing a very exhaustive statement of the sanitary condition of these places. The list of subjects contained in the twenty schedules embrace the following: Location, population and climate, topography, water-supply, drainage and sewerage, streets and public grounds, habitations, gas and lighting, garbage and excreta, markets, slaughter-houses and abattoirs, manufactories and trades, public school buildings, hospitals and public charities, police and prisons, fire establishments, etc., cemeteries and burial, public health laws, regulations and municipal officials, registration and statistics of deaths and of disease, quarantine, and municipal sanitary expense. The results of the survey are of very special local interest, and also possess some general value; but the main object of their presentation in the report is "to serve as suggestions to those engaged in inquiries relating to municipal sanitation, and to form the basis of reports to the National Board of Health upon the sanitary conditions of a place." Any one contemplating work of this character will profit by first consulting this instructive and comprehensive guide.

Appendix I contains the preliminary report of a special committee of the National Board of Health, consisting of Drs. J. S. Billings, H. A. Johnson, and R. W. Mitchell, appointed to conduct a sanitary survey of the city of Memphis, at the request and with the aid and coöperation of the local and State authorities. This action was rendered necessary in view of the calamitous visitation of yellow fever, which in 1878 caused 2779 deaths, and in 1879 as many as 497 deaths, in a population of 35,000 nominally, but which, in fact, is an over estimate, as an exodus of citizens occurred soon after the commencement of the disease.

The survey was conducted in the winter of 1879 and 1880, and embraced in its scope a thorough house-to-house inspection, the subjects of the water-supply, drainage and sewerage, town cleansing, removal of excreta and other waste matters, mortality records, and other questions of like importance. Upon the data thus obtained has been founded a tolerably complete sanitary history of the city of Memphis, which, as a guide to the correction of evils, was immediately productive of the greatest good, and which will serve hereafter the valuable purpose of a record for refer-

ence. Some idea may be formed of the magnitude of the work by the statement contained in the report of Dr. F. W. Reilly, inspector in charge, that the inspection returns filled 96 folio volumes, covering 9508 inspections, and the tabulation of returns 4 royal folio volumes, containing 176,433 different entries. "On these sheets it is believed every structure and individual lot of ground within the corporate limits of Memphis is succinctly described, with its sanitary history at date of inspection."

A paper by Dr. Charles Smart, U. S. A., on the practical results of an analysis of the water-supplies of Memphis and of certain towns and villages in Mississippi and Tennessee concludes the report of the committee charged with making a sanitary survey of Memphis.

Dr. P. H. Bailhache, Surgeon U. S. Marine Hospital Service, furnishes in Appendix K a report on the Hygiene of the Mercantile Marine, with certain recommendations having reference to measures deemed expedient for the improvement of the sanitary condition of this service. The report is a digest of facts obtained mainly by means of a circular letter addressed to medical officers of the marine hospital service, stationed at the principal ports of the United States. The information thus secured is classified under various headings, the principal of which relate to the ventilation of quarters on shipboard, water-supply, food, duties of officers and men, care of seamen during voyage, provision for safety in time of storm or shipwreck, the various questions relating to seamen while on shore, as habits, lodgings, shipping agents, etc., preventable diseases, physical examination of seamen, homes for disabled seamen, apprentices; also the sanitary needs on board ship, hospital accommodations, and accommodations for female and infant passengers. Then follows a brief statement of existing legislation on the subject under consideration. And the report concludes with recommendations for the improvement of the sanitary condition of the merchant marine, based upon the data obtained by the investigation. The subject is an important one, and merits earnest and thoughtful consideration.

The report of Dr. E. Harris, of New York (see Appendix L), on an outbreak of Malignant Diphtheria which occurred in May and June, 1879, in the township of Newark, Caledonia Co., Northern Vermont, presents a unique and concise history of the rise, progress, and decline of a very destructive epidemic disease among the thrifty inhabitants of a mountain district hitherto enjoying a reputation for salubriousness. The opportunities for studying the agencies and conditions by which diphtheria produces its ravages and tends to become epidemic, and for testing the efficacy of properly administered sanitary measures in preventing the contagious propagation and prevalence of the disease, were exceedingly favourable; and the occasion has been turned to fruitful advantage by timely and intelligent investigation. The results of the inquiry, as presented by Dr. Harris, show that diphtheria is liable to appear in almost any region, from causes which are as yet imperfectly understood; that the virus being present, the virulence of the infection and the malignant progress of the disease are greatly intensified by the presence and coöperation of insanitary conditions; and that its contagious propagation and malignant prevalence may be prevented or restricted by the timely adoption of adequate sanitary measures. The experience gained by this recent and severe outbreak of diphtheria is a fresh argument showing the necessity of the establishment of a central authority charged with a supervision of the sanitary interests of the State, and always ready to advise and direct measures for the safety of the people in time of imminent peril.

As provided for in the constituting act, the National Board of Health has advised with the principal sanitary organizations and sanitarians in the United States and with the National Academy of Sciences, relative to the best plan for a national public health organization, the subject of quarantine, both maritime and inland, and the relations which should exist between State and local systems of quarantine and a national quarantine system claiming especial attention. The results of the consultations and conferences, briefly summed up on pages 6, 7, and 8 of the report, have established a clearer conception and knowledge of the whole subject than could otherwise have been obtained, and have been largely influential in determining the character of the operations of the board, and in giving shape and support to their recommendations.

Special attention has been given to the elaboration of a system of quarantine regulations, agreeably to the provisions of an act approved June 2, 1879, entitled, "An Act to prevent the introduction of contagious and infectious diseases into the United States." Rules and regulations as contemplated by the act were prepared without delay, and approved by the President, June 26th (see Appendix M); but, unfortunately, they were rendered inoperative by the unwillingness of the authorities of certain ports where contagious or infectious diseases had existed or did exist to permit of their official promulgation, and also by the refusal of captains or owners of vessels at several ports of other powers to supply themselves with the bills of health required by these regulations. This failure in administration proved conclusively the need of an international system of quarantine, and accordingly the initiatory steps were immediately taken for convoking an international congress for the purpose of securing, "by international agreement, a reliable and satisfactory system of notification as to the actual sanitary condition of maritime ports so far as regards the existence of contagious and infectious diseases in such ports."

Without such coöperation no satisfactory system of maritime quarantine is possible, and no effort should be spared to secure it.

In addition to the rules and regulations above mentioned, the board prepared certain sanitary regulations for quarantine stations, vessels, railroads, etc., which were issued to State and municipal health authorities, and have been adopted with advantage by a number of State and local boards of health (Appendix N). The experience gained by the rigid test of the first summer suggested modifications and improvements in these rules, which have since been made, after consultation with State and local authorities. The effort of the National Board to perfect, so far as practicable, a uniform system of inland and maritime quarantine regulations, to take the place of the various conflicting, and, in many cases, inefficient regulations prescribed by the different State authorities, is a movement in the right direction, and its progress leads to the belief that it will eventually meet with general approval.

As a preliminary to a full knowledge of the actual conditions and necessities of the various quarantine stations of the Atlantic coast and Gulf of Mexico, it was early determined to employ a number of inspectors charged with the responsible duty of investigating the sanitary condition of these places, and of observing the practical operation of the quarantine regulations.

The results of these observations and inquiries have been embodied in a series of reports which are presented in Appendices, marked O and P, the latter specially relating to the quarantine at New Orleans. These

reports cover the remaining 170 pages of the volume. It would be impossible with our limited space, and indeed is unnecessary, to go into the details therein presented; it will suffice our object to refer to some of the leading features and prominent recommendations. It is not expected, in so extensive an undertaking as that embraced in an investigation of the sanitary condition and necessities of the ports of the entire Atlantic and Gulf coasts, that the work would be exhaustive. Sufficient, however, has been obtained to serve as an intelligent guide for the National Board in directing future quarantine measures, and to form a valuable record for reference.

Special attention is called to the able report of Dr. Elisha Harris, embracing the district from Portland, Maine, to New York City. It would appear that a portion of the report has been omitted, and that certain data for which space has been reserved, have never been supplied. With the exception of these defects, the report with its large number of maps and charts (25), and numerous diagrams, is a very creditable document, which will be of great value for future reference. In its scope and fulness, it partakes somewhat of the nature of a sanitary survey. The geology, sanitary topography, drainage and sewerage, water-supply, town cleansing, statistical records, sanitary government, and quarantine history with special reference to yellow fever and cholera, are alluded to sufficiently in detail to give one a very good general knowledge of the subject. The experience gained by the investigation leads to the conclusion, that the danger to the public health in ports and cities on the North Atlantic coast is far more perilous from local sources of disease than from any causes which lie beyond local control; though there is none the less need of maintaining the proper sanitary defences against the introduction, distribution, and propagation of disease from without. The conclusions on pages 328–331 will be read with advantage.

We regret that we are not able to speak as favourably of some of the other reports. Those embracing New York City, Philadelphia, and Baltimore, by Dr. E. M. Wight, furnish merely a brief description of the quarantine stations, the plan of their management, expenses, etc. Fuller descriptions of the remaining stations on the coasts with some allusion to their sanitary conditions and surroundings, and the more pressing needs of the quarantine service, are furnished in the rest of the papers. Some of these are disjointed and fragmentary, and partake more of the nature of a collection of correspondence rather than a clear, concise, and systematic presentation of the results of the investigations. The crude material has, however, been furnished in abundance, and he who is sufficiently interested in the subject to devote the time necessary for culling out the most important facts, will be amply rewarded.

The common evils of the day, such as bad drainage and sewerage, unsatisfactory and neglected removal of refuse matters, impure water-supply, pollution of air, soil, and drinking-water by storage of excreta upon the premises, bad pavements and inefficient street cleaning, are no exceptions in the ports and places visited on the South Atlantic and Gulf coasts. These insanitary conditions are the chief influences which threaten the public health, and tend to favour the propagation of diseases which are occasionally introduced from other localities. In no places were the quarantine defences found abreast with the requirements of the times. In some instances, Dr. Bell, the sanitary inspector, was able to suggest improvements, which were courteously received and adopted. In others, the

data collected, and recommendations were referred to the National Board of Health for more deliberate consideration.

The remaining reports refer to the sanitary inspection of places on the Atlantic coast of Florida, and on the Gulf coast from Key West to the Rio Grande. The inspections were made by Drs. Elliott, Cochran, Palmer, Johnson, Pope, Wight, and Bell. In some instances, there are reports on the same places by several different officers. The special interest centred in this portion of the coast line on account of its association with the history and spread of yellow fever, and the facilities for intercourse with Cuba, necessitated a very thorough examination, even of places of small population and of little commercial importance.

The results of these investigations demonstrate conclusively the necessity of national supervision over quarantine regulations, as conducing to, and securing, a more uniform, efficient, unprejudiced, and least onerous and expensive administration of the offices of quarantine stations. Such supervision is particularly applicable to stations situated at, or controlling the entrances to the great commercial highways of the country, through which, mainly, contagious or infectious diseases are liable to be introduced from abroad; as, for example, at the mouth of the Mississippi, at Key West, on the south Atlantic coast, at the mouths of the Chesapeake and Delaware Bays, and at New York and Boston harbors.

The whole report is a very commendable production. The tardy publication of the volume would have been more objectionable had not the weekly bulletin already supplied much of the information now compiled in this work. A more extended index would have been appreciated by the reader. The proof-reading might have been more accurate, and the mechanical execution of the book more creditable. With these exceptions, we have nothing but praise to bestow upon this record of the results of the first year's labours of the National Board of Health.

W. H. F.

ART. XXII.—*On Cancer of the Breast.* By THOMAS WILLIAM NUNN, F.R.C.S., Eng.; Consulting Surgeon to the Middlesex Hospital. 4to. pp. xiv., 230. London: J. & A. Churchill, 1882.

SUCH books as this one can only emanate from the elders in the profession, and it is eminently fitting that from them such volumes should come. Its conclusions are based upon a wide experience, and are therefore entitled to a most respectful consideration, while the practical tone of Mr. Nunn's remarks, both upon theory and practice, cannot fail to commend them to those who are interested in the subject.

We propose to follow Mr. Nunn through the practical portion of his work in some detail, treating the theoretical and pathological part with less minuteness, not as less important, but as less firmly established, and still *sub judice.*

In a brief and tersely expressed introduction of some fourteen pages, Mr. Nunn has given his views upon the nature of cancer. He regards it as essentially an ineffectual effort at development which ends in the production of tissue monstrosities, in which there is no order, but all is in con-

fusion, the very varied appearances presented being in fact divergences of normal tissue, modified by exaggeration, by defect, by malposition, or by eccentric combination. Mr. Nunn thinks that the latest researches do not enable us to go further in our definition, and that while the course, progress, and termination of the disease have been made plain by observation, it yet remains to be determined how it begins, and what are the starting-points from which ensue the modifications of normal structures.

It is the opinion of our author that a more efficient and valuable classification of cancers will be obtained by striving to mark the points of resemblance existing between the different forms, rather than by directing attention to the differences so evidently existing. In this way we may get back to the starting-point, to the initial and essential lesion. We know that embryonic development proceeds from a simple cell, and as we account for the varied appearances presented by cancers upon the theory that it is essentially an attempt at development, we may hope yet to trace the disease back through all variations to its beginning.

Establishing himself upon this hypothesis, made highly probable by observation, Mr. Nunn is inclined to look upon cancer in any part as a modification of that part rather than as something extraneous or heterologous. As the human organism is composed of an aggregation of units, which may at any time be deformed by accidents, or unknown causes, and which all ultimately terminate in degeneration and death, so the as yet unknown influential cause of cancer may at any time bring about this deterioration of form, and retrograde change in any part.

Despite the very varied appearances presented by cancer in the different tissues, microscopical investigation enables us to demonstrate certain invariable characteristics. Thus, whenever we find cancer, we find innumerable cells in the stroma of the organ, with very active reproductive, and but very little developmental power; we find an active attempt to reproduce tissue like that of the organ in which the disease exists, but the attempt is abortive, has stopped short of perfection, premature degeneration has been established, and a grim caricature of the normal process has resulted. Not only has the new cancerous tissue a strong tendency to atrophy and death in itself, but by its encroachments, and by the stimulus of its presence, it provokes the remaining normal tissues to similar action, and we have atrophy, molecular death, and gangrene, *en masse*, of the part.

Thus, while we have been compelled to relegate the typical "cancer-cell" to things of the past, and to recognize the fact that the normal cells of any part may become the progenitors of cancer-cells, we are yet able to maintain the identity of cancer, by its invariable characteristics and results.

After a graphic description of the cellular elements to be found in cancers, and the development of their fibrous stroma, Mr. Nunn goes on to give his reasons for thinking that we need not hesitate to assign tumours of the most different degrees of density to the same fibrous—connective-tissue—origin, when we recall its universal presence even in the most diverse normal organs. Nor does he think that the question of an epithelial, or epidermic, origin need present any difficulty in view of their close histological relation in normal parts. For, while admitting the inherent difference between epidermic and epithelial cells, he maintains that not only is there no antagonism, but a real reciprocal alliance between them. To support this he instances their union in the ovum, and the lining of a newly formed bursa, and other serous surfaces, with epithelium, which presumably must have at least a close connection with connective-tissue

cells, if it does not originate from them. At any rate they do not appear to be in any way antagonistic to each other.

While certain forms of cancer classified and described as such sometimes exist almost alone, and go to form the mass of some tumours, in very many cases these varieties are found to exist together in the same tumour. This fact causes Mr. Nunn to ask with much pertinence whether they should not all be classed together as cancer, modified by the tissue peculiarities of the part involved. In them all, however, we find the one invariable fact, that with great reproductive activity there is deficient developmental power, and we have the continued growth and the continued death, which in greater or less degree seems to be the leading characteristic of cancer.

Passing from Mr. Nunn's introduction we come to the first part of his work, which he denominates "Clinical and Pathological." Mr. Nunn's experience, coinciding with that of other observers, shows that the breast and the womb are the most frequent seats of cancer, although the proportion of cases of disease in either part will vary somewhat in different series, from peculiar circumstances. Thus, in 268 consecutive out-patient cases, Mr. Nunn noted 157 cases of cancer of the breast, and 47 of the womb; but of 1000 cases observed in the In-patient Cancer Department of the Middlesex Hospital, the proportion was different, 260 being of the breast, and 389 of the womb. In a foot-note it is explained that this difference may be accounted for from the fact that cases of cancer of the womb are admitted into the Middlesex Hospital from, probably, all the other hospitals in London.

Of 160 cases observed by Mr. Nunn, the average *age* of attack was 50.4, and, on page 161, he prints an analysis of his cases into quinquennial groups, compared with the average number of persons living at the respective ages. This comparison does not materially alter the results, and the greatest liability is shown to be between the ages of 45 and 49 inclusive, when the percentage rises as high as 18.006. That is, taking Mr. Nunn's 160 cases as a basis of calculation in 100 cases of cancer the disease will be found to make its attack between the ages of 45 and 49 years in 18.006 cases.

Under the head of *diagnosis*, Mr. Nunn speaks of cachexia as perhaps existing, even though it be with a "look of healthiness." Now it seems to the reviewer to be an error to allow cachexia a place among the symptoms upon which a diagnosis must depend. No doubt, in advanced stages, we find a cachectic condition, as we do also in many diseases accompanied with exhausting discharge; but the symptom has then lost all diagnostic value. Nor do we see that the "look of healthiness," to which Mr. Nunn refers as existing with cachexia, has anything to do with the matter, for certainly, if the patient looks healthy, her appearance will not aid us in arriving at a conclusion that she is suffering from cancer. Mr. Nunn has found severe pain to accompany acute cancers; while those cases which are less active may be, and often are, entirely free from it. There is another circumstance which cannot be lost sight of by the surgeon who would base a diagnosis upon so subjective a symptom as pain, namely, the varying sensitiveness of different patients, and the difference which exists in the descriptive language used by them.

In *Retraction of the Nipple and alteration of its level*, we have a symptom which, as Mr. Nunn very well shows, is of the utmost value. Thus, the nipple of the affected side will be found not only retracted, but it will

approach more nearly to the clavicle than its fellow of the opposite breast. The author of this volume says, that where this elevation has existed, he has not known cancer to be absent. Coloured discharge from the nipple he regards as very suspicious, and eczema of the nipple and areola, or that which is described as such, as another evidence of the beginning of a cancer. It will be remembered what stress Sir James Paget lays upon this fact, and how he regards it as an almost invariable precursor of cancerous disease.

Great caution is advised in giving a prognosis, as Mr. Nunn's experience has taught him that it is at first impossible to say how long will be the duration of a given case—it may be twenty years before a fatal issue is reached, or, on the other hand, the progress of the disease may be rapid, and the case terminate within twelve months.

Speaking of the progress of cancer of the breast, Mr. Nunn points out that, with all the variations which may be observed, the process is unchanged, and deposition and destruction, hypertrophy and atrophy, go hand in hand. The beautifully executed plates at the end of the volume well and faithfully present this fact. Besides the contamination of the axillary glands, and the extension of the disease to the thoracic cavity, which he regards as impending processes, Mr. Nunn speaks of the secondary affection of the cerebro-spinal system as rare, yet as comparatively more frequent in those persons who have the most highly developed nervous systems.

Upon the subject of surgical interference our author holds decided ground. Although not adhering to the theory of the local nature of cancer, he does not hesitate to advocate the removal of the tumour in selected cases. He does this upon the same basis of reasoning as is adopted by Mr. Birkett and others, that by operating we are doing at once, and speedily, what nature is striving to do by a long and painful process; that the comfort of the patient is promoted; and that in some cases there is great prolongation of life obtained thereby. The opponents of an operation hold tenaciously to the opinion of Brodie, based upon a most extended experience, that the average duration of life is shortened by removing mammary cancers, but most surgeons have met with cases in which a long immunity from the disease has followed an operation, or where its return in some internal organ has led to a comparatively painless death. It is in the hope of obtaining these advantages that Mr. Nunn counsels an operation in selected cases. Where an operation is done he is most decided in advising that the entire breast be removed; that, if necessary, the disease should be followed into the axilla; and, above all, that the incisions should be so arranged, if possible, as to allow of and insure free drainage. The hemorrhage should be efficiently controlled, and the wound dressed as speedily as practicable, its edges being brought into accurate apposition by means of sutures. While he regards the antiseptic method as yet in its infancy, and looks forward to future developments in that direction, he does not think that the spray, or rigid Listerism, is required. He has himself had much satisfaction in the use of dilute sulphuric acid as a dressing, and his observation leads him to conclude that the value of the chloride of zinc applications, at one time advocated by Mr. De Morgan, consist in their antiseptic properties. Considerable space is devoted to a consideration of Dr. Fell's method of extirpating cancerous tumours by chloride of zinc paste. This plan Mr. Nunn has tried, and save that it does not necessarily confine the patient to bed, seems to possess no advantages, and some very decided

disadvantages. It may be well to briefly describe the process here, that some of our readers who may come across patients possessing an invincible repugnance to the knife may resort to this Fell process (no pun is intended). First, the skin over the whole area of the tumour, and beyond, is thoroughly acted upon by the strongest nitric acid, for which step of the procedure, of course, the administration of an anæsthetic is required. The next day, into the tissue thus hardened by the acid, shallow incisions are made, parallel to and about half an inch distant from each other, and into each incision is packed a strip of muslin loaded with the chloride of zinc paste. These incisions are sufficiently numerous to cover the whole area of the growth. The process of deepening these grooves and packing them is repeated daily, until the depth of the tumour has been reached, when any slight attachments remaining are divided, and the whole sloughing mass is removed. Mr. Nunn has found this process in some cases painless, while in others the pain is severe and continuous, and he has not found any greater retardation of a return of the disease or a greater prolongation of life to result from any caustic process, than he has obtained by using the knife. Electrolysis, and the much-vaunted injection of acetic acid have neither proved themselves to be superior methods of treatment, in Mr. Nunn's experience.

In the treatment of the cancerous sore, Mr. Nunn has made use of many articles, both to allay irritation and diminish fetor. Iodoform, to which he gave a fair trial, disappointed his expectations, and he seems to have had more satisfaction from the use of a weak solution of sulphurous acid, applied by irrigation, than from any other, though he does not reject the use of some other disinfectants.

The remainder of the first or "Clinical and Practical" portion of the book is taken up with the narration, in more or less detail, of sixty illustrative cases. The duration of the disease in these cases varied from one to nearly twenty years. It seems to the reviewer that, in view of the long continuance of many cases of cancer, there is one important fact deducible, *i. e.*, that patients attacked by cancer, even while they know that the disease is incurable, should be encouraged to regard themselves as invalids, who, with care and nursing, may have many years of comparatively useful and comfortable life before them. Many persons afflicted with cancer may, and do, die of other diseases. It is, therefore, happy for them if they can avoid despondency, and, even while they know that the doom of death has been pronounced upon them, recognize that such a doom, so far as this world goes, impends over all; while they know that their own sentence has been pronounced, they may be assured that the same sentence will be executed upon many around them without the same formal notice.

Mr. Nunn prints tables showing the post-mortem appearances in one hundred and twenty-three cases of mammary cancer, which present some interesting facts, and are worthy of special study. We think it was an error not to furnish a summary analysis of them.

The second part of this work is designated as "Pathological and Speculative." We have read it carefully, and have felt repaid for the perusal, but the growing dimensions of this notice warn us to hasten to a conclusion. Then, as we have before stated, very many points in the pathology of cancer are as yet unsettled, and we know hardly anything more disheartening than, after having mastered the abstruse theory of an eminent pathologist on one page, to find, upon turning the leaf, that the whole scheme is pronounced and demonstrated to be a fallacy by a later and

equally distinguished observer. We shall, therefore, merely note one or two observations of our author, and feel that we have presented his own theoretical views with sufficient fulness in our analysis of his introduction.

Smokers will be glad to know that Mr. Nunn does not believe that the tobacco-pipe can produce a cancer where the predisposition does not exist. An interesting feature is a cancer-map of England, showing the birth-places of patients suffering from the disease, and proving the statements of Mr. Moore and Mr. Haviland, that it is much more prevalent in the southern part of the island.

In this part of the book will also be found a very valuable summary of the views of many distinguished modern English and European authors. In an appendix, space is given to an exceedingly interesting abstract of the important discussion upon cancer at the London Pathological Society, in 1874, which is also conspicuous for the very widely different opinions expressed by some of the best men in the profession who took part in it.

It remains for us but to speak of the illustrations which conclude the volume. They consist of twenty-one coloured lithographs, six being portraits of the gross appearances in typical cases of cancer of the breast, while the remainder represent the microscopical appearances of cancer in various parts of the body. They are admirably executed, and are in keeping with the general appearance of the volume, which, with its good print, liberal margin, and heavy paper, is entitled to a place among the handsomest of recent surgical publications. S. A.

ART. XXIII.—*A Manual of Obstetrics.* By A. F. A. KING, M.D., Professor of Obstetrics and Diseases of Women and Children in the Medical Department of the Columbian University, Washington, D. C., and in the University of Vermont, etc. etc. 12mo. pp. 325. Philadelphia: Henry C. Lea's Son & Co., 1882.

THIS small duodecimo volume is one of the smallest and most condensed of all the *multum in parvo* obstetrical treatises which have come under our observation in several years past. As it is confessedly prepared in large measure from the standard works of Professors Playfair, Leishmann, and Lusk, its merit as a manual depends very much upon the power of condensation possessed by its author, and the closeness of his adherence to the teachings of these three obstetricians. For an ability to convey instruction in few words, we will give Prof. King all due credit, as in this respect his little book is quite a success. We will, in our examination of it, however, point out a few sections which appear to require attention.

The cause and prevention of perineal laceration is treated by the author according to the views of some of our best writers; still he does not reach the root of the matter entirely. Why does the perineum give way? This is a question that has several answers according to circumstances. Take an actual case. A lady was five times delivered with care in this city by an able accoucheur, by the aid of the forceps, without any giving way of the perineum. On a sixth occasion she delivered herself hurriedly and alone of a small child, and tore her cervix open, and her perineum into the

rectum. Here the parts must have become lacerated, because they had not had time to perfect the softening process which takes place in them during the progress of labour. Although supporting the perineum, as formerly taught, may not be required, laceration may often be prevented by resisting the passage of the child during a pain or two, and at the same time cautioning the mother not to bear down. When violent uterine and abdominal contractions come on, with an irresistible inclination to bear down, the exit of the head must be resisted by the accoucheur, if he finds the perineum thinned under the pressure until almost on the point of giving way. After such a distension, the parts will yield with safety in a pain or two. After such a narrow escape, there is a second danger to be apprehended from the unequal pressure produced in the delivery of the sacral shoulder. Take another case. We have recently been consulted in one where rupture took place in the birth of a first child to such an extent as to tear up the rectum about three inches. The fœtus was a female of ordinary size, but the vulva of the mother was unusually small, and the vulvo-rectal space very short. Had the parts been pared and sewn up an inch and a half from the anus, the vagina would have been nearly closed. Besides a disproportion between the head of the fœtus and the vulvar outlet, there is the toughening of the parts produced by age; and in some instances a weakening of the tissues of the perineum. In the last event, claimed by many observers, there is no measure of prevention that will avail.

It is hardly worth while to mention the subject of symphysiotomy in a manual; but as the author has, we must correct him when he says, "that it has been abandoned and become obsolete," page 191. There were forty-nine operations as far as known in the world during the first era of this method of delivery, and there have been fifty in Naples since its revival in 1869.

Of the Cæsarean section he writes (page 192): "The percentage of maternal recoveries, *under the most favourable circumstances*, is roughly about fifty per cent. The results of statistics notably unreliable." In our own country the recoveries under the circumstances named have been seventy-five per cent. In Great Britain scarcely above the average of all their cases. The reliability of our American statistics is defended in a special article in this number. Those of Continental Europe are such as he claims.

The Porro operation is not such as he describes on page 195. He says: "The ovaries also are sometimes taken out." Porro calls his modification a "utero-ovarian amputation." The cervix is not transfixed and wired each way in the original operation, but surrounded by a wire loop tightened in the serre-nœud of Cintrat. The broad ligament also is not cut on either side of the uterus. The number of operations, as far as ascertained, is eighty-four, and recoveries thirty-seven.

For the relief of ante-partum hourglass contraction of the uterus, he does not mention the claim that has been made for success with the nitrite of amyl.

The volume is neat in appearance, well illustrated, and will answer as a remembrancer for students of medicine and those wishing to hurriedly refresh their memories on obstetrical manipulations and methods.

R. P. H.

ART. XXIV.—*Transactions of the American Ophthalmological Society. Seventeenth Annual Meeting.* 8vo. pp. 317. New York, 1881.

THE first paper is by Dr. WM. F. NORRIS, of Philadelphia, *On the Administration of Anæsthetics in Bright's Disease of the Kidneys, and on Some Cases of Sudden Death after Cataract Operations*, in which the author records two cases of death supervening unexpectedly after operations for cataract. "They present four features in common: 1st. They were both anæsthetized with sulphuric ether; 2d. They entirely recovered consciousness; 3d. They died comatose—one a few hours, the other eighteen days after the operation; 4th. In both cases a careful autopsy revealed no organic lesion, except Bright's disease of the kidneys;" and both deaths are attributed to the same cause—congestion induced in diseased kidneys by the administration of ether.

The first case was that of a child five months old. The patient recovered consciousness sufficiently to nurse, but remained fretful, and two hours after the operation, had a convulsion, followed by others, and died comatose in four hours. The only lesion found, on *post-mortem* examination, was fatty degeneration of the kidneys. Reference is made to statistics, which prove that Bright's disease of the kidneys is not infrequent in infants.

The second patient was a lady sixty-eight years old, apparently in good health. She recovered readily from the anæsthesia, and the eye did well, but there were unfavourable general symptoms—slight fever, thirst, quick pulse, coated tongue, and diminished quantity of urine, passed frequently. The urine had a specific gravity of 1008, and contained a small amount of albumen, and the microscope showed fatty and granular casts. Death, preceded by coma, occurred on the eighteenth day after the operation, and the kidneys were found to be decidedly granular.

A case is also reported in which a patient with fatty kidneys died twelve days after an operation for cataract, performed without anæsthesia, and the importance of this kidney complication in all operations for chronic diseases is discussed.

In a report of *One Hundred Cases of Cataract Extraction with a Single Failure; with a Discussion of the Advantages of Non-Anæsthesia in this Operation*, Dr. HASKET DERBY, of Boston, gives the statistics of two hundred cases of cataract operated upon with ether and of a similar number without ether. Of the 1st class there was in 81 cases vision of $\frac{1}{10}$ or more; in 8 cases V. $= \frac{1}{12}$ to $\frac{1}{60}$; in 2 cases result still undecided; and in 9 total failure. Of the 100 patients operated upon without ether, 89 gained vision of $\frac{1}{10}$ or more; 9 from $\frac{1}{12}$ to $\frac{1}{60}$; one awaited a secondary operation; and in the case of one only was the operation a total failure. This is an unusually good showing, and is strong proof so far as it goes; but more extended statistics will be necessary to make out a positive case against anæsthesia. Dr. Derby uses eserine before operating, and insists that, unless some complication demands it, the eye should not be opened for at least a week after the operation.

Dr. B. JOY JEFFRIES discusses *A Peculiar Expression of the Eyes of the Colour-Blind*, to which attention was called some years ago by Professor Wilson, of Edinburgh, but which has not been mentioned by any other of the now very numerous writers on the subject of colour-blindness. As we have failed to seize upon anything definite which would enable us

to describe this expression, we must let the authors speak for themselves. Professor Wilson says of four cases, considered somewhat typical: "One has an absent, anxious glance, with something of the expression which amaurosis gives, only the pupil is small. One has a startled, restless look. The other two have an eager, prying, aimless air. The character common to them all, and to the others I have seen, is this aimlessness of look." Dr. Jeffries adds to this that "there is a certain liquid look to the eyes, as if slightly suffused." Professor Wilson invokes the aid of Macbeth to describe it, with—

> "Thou hast no speculation in those eyes
> Which thou dost glare with,"

while Dr. Jeffries, with the practical tendency attributed to his countrymen, illustrates the effect of this peculiar look by an anecdote of a colour-blind schoolmaster, who, by means of it, promptly quelled the turbulence of a hall full of roistering boys.

We are not prepared to deny that this very peculiar expression is a scientific fact, but are inclined to think that its recognition will require a good deal of experience and, perhaps, some enthusiasm.

Dr. WM. S. LITTLE, of Philadelphia, reports *A Case of Persistent Hyaloid Artery*, with excellent illustrations by Dr. J. M. Taylor. Dr. L. thinks that the vessel, which doubles upon itself and joins the retinal vessels, contains blood.

Dr. JOHN GREEN, of St. Louis, Mo., describes *An Operation for Closed Pupil with Anterior Synechia, using the Pince-ciseaux of Wecker.* The anterior chamber was opened by means of a Graefe cataract knife, the synechia was divided with the Wecker scissors, and one blade of the instrument was passed through the opening thus made in the iris, and the iris, lens-capsule, and newly formed tissue were cut by a single closure of the blades. Useful vision was obtained.

A case of *Congenital Paralysis of both Abducens and both Facial Nerves* is reported by Dr. G. C. HARLAN, of Philadelphia. The complete congenital paralysis of these two nerves, widely separated in their course after they leave the brain, points to a central cause, and supports the view that they arise from the same nucleus; while the preservation of taste with complete paralysis of the facial indicates that the deep origin of the chorda tympani is not the same as that of the facial.

Dr. CHAS. STEDMAN BULL, of New York, in some remarks on *The Treatment of Scars of the Face involving the Eyelids, directly or indirectly*, discusses some of the common causes of failure in operations upon such cases, and insists upon the importance of preparing the parts by massage, traction, subcutaneous division of adhesions, etc.

A Source of Danger in the Frame of the Eyeglass as commonly manufactured is exposed by Dr. F. B. LORING, of Washington, D. C. Dr. Loring reports two cases, one ending in loss of the eye, in which injury was inflicted by the small spike—which is always placed on the *inner* side of the handle of the frame as a means of locking the glasses together when closed—being driven into the eye by a blow. He recommends that this catch be removed entirely in those cases where the patients wear their glasses constantly, and that it be placed on the *outer* side of the frame when used at all. The soundness of this advice is beyond question, and it is to be hoped that this valuable little practical suggestion will not be unheeded.

A Case in which Useful Vision was maintained through a number of years by the aid of a totally dislocated Lens, is reported by Dr. SAMUEL THEOBALD, of Baltimore. The lens, which was quite transparent, was found to be dislocated directly downwards and to be lying some distance below the pupil. By bending his head well forward and turning his face towards the floor, thus bringing the lens into the axis of vision, the patient could read No. 1 of Jaeger's tests (diamond type). His distant vision was brought from $\frac{1}{200}$ to $\frac{20}{70}$ by a $+\frac{1}{7}$ glass.

The convexity of the lens was found to be quite equal to that of the normal lens in full accommodation—a fact which supports the Helmholtz theory of the mechanism of accommodation, according to which the increase in the convexity of the lens in near vision is accomplished by the action of its elastic capsule, when freed by the ciliary muscle from the restraining influence of the suspensory ligament.

Dr. S. D. RISLEY, of Philadelphia, in a discussion of *The Comparative Value of the Mydriatics*, gives the following conclusions:—

"That the sulphates of atropine, duboisine, and hyoscyamine are efficient agents for paralyzing the accommodative function, and in the treatment of asthenopic eyes. That, in the employment of the last three named, the duration of the treatment is very much shortened. That, for the correction of anomalies of refraction, in otherwise normal eyes, the homatropine is to be preferred. That, if retino-choroidal disturbance is also present, hyoscyamine or duboisine are preferable; to atropine, because of the shorter duration of the treatment; to homatropine, because of their more persistent control over the ciliary muscle. That hyoscyamine is preferable to duboisine, since the tendency to systemic poisoning is not so great."

Dr. CHARLES J. KIPP, of Newark, New Jersey, reports *Two Cases of Sarcoma of the Choroid, presenting unusual Clinical Features.* Their peculiarity consisted chiefly in the absence of increased intraocular tension, and the fact that there was but very limited detachment of the retina.

Dr. F. BULLER, of Montreal, Canada, reports *A Case of Sudden and Complete Loss of Vision after large doses of Quinine.* The patient was a lady, 34 years of age, previously in good health, and the quinine was given on account of symptoms of septicemia occurring five days after child-birth. Two 20 gr. doses were taken in the first 24 hours, the same on the second day, and three such doses on the third day. On the fourth day the fever and delirium had passed off, but the patient was found to be absolutely blind. There had been tinnitus and some deafness after the first two or three doses, but it had passed off. The pupils were widely dilated and immovable. The ophthalmoscope, at first, revealed no decided change in the fundus, except a bluish-gray haziness of the retinæ, most marked at the maculæ. Later the optic disks were pale, and the retinal vessels much contracted. As vision returned there was concentric limitation of the field. Central vision was completely restored, but some limitation of the field remained, and the ophthalmoscopic changes were permanent. The author thinks that sudden blindness from cinchonism may be attributed to rapid effusion into the lymph spaces around the optic nerves.

Dr. J. P. WORRELL, of Terre Haute, Indiana, reports *A Case of Marked Narrowing of the Field, with diminished Acuity of Vision, following the use of Duboisia, and presumably a result of the use of that drug.* This condition, which followed the application of duboisia to healthy eyes for the purpose of determining the refraction, lasted for several weeks.

Dr. G. C. HARLAN, of Philadelphia, describes a *Case of Intermittent Concomitant Convergent Strabismus.* The regularity of the intermissions, which were of the tertiary type, continued with the greatest exactness for more than a year, when the squint appeared irregularly, and finally became constant. There was very little hypermetropia, and glasses were without effect.

A Case of Hemorrhage near the Macula Lutea, from Concussion, is reported by Dr. D. B. ST. JOHN ROOSA, of New York. The patient was struck on the right lachrymal sac by a bullet, which passed downward, under the skin and muscles, and lodged about a quarter of an inch below the glenoid fossa. Vision was not much affected at the time, but was decidedly impaired a few weeks afterwards. When the patient was seen by Dr. R., V. = $\frac{16}{200}$, with central scotoma. The ophthalmoscope showed a red patch with displaced pigment about it, just below and involving a part of the macula. The eyeball was merely grazed by the bullet, and the author considers that the damage to the retina or choroid, or both, was due to concussion.

Dr. O. F. WADSWORTH, of Boston, discusses the subject of *Opticociliary Neurotomy*, and gives the histories of 15 cases in which he has performed the operation. The arguments for and against this operation, for which much was promised at first, but which has lately rather fallen into disrepute, are fairly given, and the author concludes that it offers sufficient advantages to make its employment not only justifiable, but advisable in many cases. He is, however, inclined to limit its applicability within narrower bounds than those proposed by some of its advocates.

Dr. JOHN GREEN, of St. Louis, contributes a paper *On Some Therapeutical Effects of Pilocarpine.* He thinks it useful "in asthenopia of young persons, unconnected with any considerable grade of ametropia, and in which pain or a sense of fatigue is the prominent symptom," and "in cases of impairment of accommodative power, induced by causes transient in their operation, but in which the accommodative disability may continue after the exciting cause has ceased to act." He uses it in connection with a systematic course of reading, instilling one drop of a solution of the muriate (gr. j or ij to ℥j) some hours before the reading is commenced. He thinks it may also be indicated in the earliest stages of strabismus convergens and in certain cases of phlyctenular and vascular affections of the cornea. He considers it more easily manageable than eserine, and less likely to cause painful spasm of the accommodation.

Dr. H. D. NOYES, of New York, exposes the fallacy of *The so-called Cure of Cataract by Electricity*, as illustrated by the history of a reputed case which he had the opportunity of observing. There was an improvement in the general health and a clearing up of haziness of the vitreous, though these results were not attributable to the use of galvanism, and vision became less foggy and more satisfactory to the patient. The opacity of the lenses, however, had increased during the galvanic treatment, and vision, as tested by the types, had diminished.

In another case of cataract, galvanic treatment had resulted in suppurative keratitis with ulceration of the cornea and iritis with adhesions.

Dr. NOYES also reports a case of *Pulsating Exophthalmos*, in which a novel plan of treatment was adopted with success. A projection at the inner and lower angle of the orbit proved to be a distended vein, and this was traced back and tied up at the spheno-maxillary fissure. The

author thinks that the primary lesion was a communication between the carotid artery and cavernous sinus, causing distension of the inferior orbital vein, and that the ligature of this vein resulted in a clot extending to the sinus.

In a case of *Pulsating Tumour of the Orbit*, reported by Dr. HENRY S. SCHELL of Philadelphia, post-mortem examination revealed a gliomatous tumour, nearly filling the left side of the anterior fossa of the cranium, and extending into the orbit through a perforation in its roof. "Although the anterior lobe of the cerebrum on the left side, including the third frontal convolution, was almost diffluent, the faculty of speech was preserved to the last." The ophthalmoscope had shown well-marked "choked disk" in each eye.

Dr. NOYES describes a *Modification of Snellen's Forceps for Entropion Operations*, and Dr. RISLEY *A New Trial-glass Frame* devised by B. Alexander Randall, of Philadelphia. G. C. H.

ART. XXV.—*A Pocket-Book of Physical Diagnosis for the Student and Physician.* By EDWARD T. BRUEN, M.D., one of the Physicians to the Philadelphia Hospital, and Dispensary of the Children's Hospital; Demonstrator of Clinical Medicine and Lecturer on Pathology of the Urine, in the Univ. of Penna., etc. etc. With wood engravings. 12mo. pp. xv., 250. Philadelphia: Presley Blakiston, 1881.

ALREADY we have several excellent works on physical diagnosis. They do not all bear a similar title; but they teach the same things in somewhat different language, and with more or less full details and differences with respect to the number and value of their illustrations. We have only to mention the names of Da Costa, Flint, Loomis, and Finlayson to prove our statement. There are others equally good which come to us from the continent of Europe, viz., those of Guttman, Barth & Roger, and Lasègue. Still we are prepared to give a hearty welcome to another, which supplies a want, or which by its contents shows care in execution or originality in manufacture. Dr. Bruen's is a small, handy volume, well printed, with a few not very good wood-cuts, presenting some inaccuracies. In his introductory chapter, he gives a fairly clear and good anatomical description of the thoracic organs and abdominal viscera, and shows how much abnormal conditions of the latter may influence the results obtained by physical examination of the chest. We object, however, to expressions like "morbid physiological status" of organs (xv.), and several others that seem to us as being apt to disturb the comprehension of the ordinary student. The work is divided into two parts: the first treating of diseases of the lungs, bronchial tubes, pleura, and mediastinum, in fourteen chapters and 158 pages; the second of diseases of the heart and pericardium in 94 pages. The first two chapters are devoted to methods of diagnosis, more particularly to percussion and auscultation. We consider the description of the manner and rules governing the art of percussion well given. The subject is always a difficult one for beginners, and requires to be well handled in order to be properly understood. We are glad that Dr. Bruen refers to Piorry's accustomed remark, "that he

felt the modifications of percussion resonance." It is true, and cannot be too strongly emphasized. Many a time this *feeling* of the resonance of organs has been to us of greater value in determining their size and condition than the sounds conveyed to the ear. Another useful remark at the end of the first chapter, is that quality and pitch are *relative terms*, and each clinical case must always be considered *in itself*, and not as dependent upon other cases.

The author believes, in the chapter on auscultation, that the single-tubed is on the whole more satisfactory than the binaural stethoscope, as used so generally in New York, since its first introduction there by the late Dr. Cammann. A few years since we shared this opinion, but a wider and more frequent use of the binaural stethoscope has now convinced us of its decided superiority as an instrument for accurate physical investigation in regard to chest-sounds. The description of the application of auscultation to the determination of vocal resonance, as well as the exact correlation shown between a given quality and pitch of resonance and similar attributes of respiratory murmur, is very clear. This lucidity is equally commendable in the account of vocal fremitus. In inspection, as is properly remarked, an ideal standard should not be the guide of our interpretation of what we notice, but rather the differences of form or movement as we observe them upon the two sides of the same individual, compared accurately and carefully with each other.

Chapter III., which is devoted to "Principles of Classification," and to "Croupous and Catarrhal Pneumonias," is, after careful reading, unsatisfactory. It offers a vein of originality, it is true, but this is no improvement upon familiar text-books, because it is somewhat obscure and incomplete.

Under the head of "Subacute Chronic Consolidation," the author speaks of the manifestations of syphilis in the lungs, and the uselessness of physical examination to reveal them. This affirmation is strangely in disaccord with the statements of Fournier.

It is not, however, anything like so difficult to comprehend as the *use of the word phthisis* (p. 58), which is applied to conditions of pulmonary substance brought about by causes such as hypostatic condensation, infarction, and atelectasis. A little further on (p. 61), in speaking of *advancing consolidation*, the author makes the following correct statement: "That in proportion to the amount of consolidation the percussion will be dull, very dull, almost flat, and the pitch will be high; or the dull note will be replaced over more or less extensive areas by a tympanitic or subtympanitic note." We cite the two affirmations which precede, and are found in this work not far removed from each other, to justify what might otherwise appear to be a sweeping criticism, viz., that alongside of teaching that is surely not adapted to the student of "essentials" in medicine, we find very sound and healthy doctrine. This atmosphere pervades this work. We understand and appreciate as *good* much that is written; other passages are badly expressed, or contain opinions which we are unable to find recorded elsewhere. They may be true; but, if true, are not yet proven or recognized. As such they ought not to be given in a "pocket-book of physical diagnosis." On page 67 we would cite as an example of personal views the following: "The bronchial and fibroid forms of phthisis are *always* associated with more or less muscular emphysema." It would have been far nearer the truth to write that the fibroid forms of phthisis are quite frequently accompanied by disseminated patches of vesicular

emphysema; the bronchial rarely. On page 73 we cite textually, "Even in practising inspection the value of the blending of clinical observation is recognized. We can by its aid differentiate cancerous tumours, hemorrhagic infarction, aneurisms, acute pneumonias, or paralysis of respiratory movement traceable to some lesion of the central nervous system, from the physical signs of phthisis by inspection." What an olla podrida, and how difficult to appreciate why such different subjects are thus juxtaposed!

In speaking of adventitious cavities in the pulmonary substance (p. 79), the author boldly affirms that "auscultation requires that the cavity shall be at least as large as a walnut." Does he mean to say that this accurate method of investigation requires the patient to be in the third stage of phthisis before it can be rendered available, or does he really consider cavities as large as walnuts only *slight* changes of tissue? The chapter on emphysema is one of the best in the book, and we commend it for its method and general accuracy. According to the author, "it is possible, but extremely unlikely, to hear a metallic note imparted to a large mucous râle developed in the bronchial tubes." We share this opinion with him. The attributes of intra-pulmonary and pleural râles are particularly well defined, and the distinctive differences clearly brought out; and it is reiterated (p. 107) that pulmonary râles may be heard in inspiration and expiration—a fact which many auscultators are prone to forget. Attention is also specially directed to the separation of bronchitis and catarrhal pneumonia in cases in which fine mucous râles are present; here the thermometer has much utility, as the temperature ranges higher in the former disease. In the diagnosis of acute miliary tuberculosis the author omits to refer to the very marked irregularity of the temperature curve, as well as to the great matutinal elevations. He likewise fails to point out how intense is the dyspnœa, and how little this symptom is accounted for at times by the frequency of pulse and respiration, or by the evident physical changes in the lungs. In acute pleurisy it is noticed very properly that one pleural sac may be completely filled, if it occur gradually, *without* occasioning noticeable dyspnœa. No clinical fact is of greater importance at times, and the recognition of it has more than once permitted us to perform thoracentesis, and thus to save lives in most imminent peril. In the bronchial breathing of pleurisy with effusion (p. 135) "the most useful distinguishing feature is the element of distance, or muffled quality of the murmur." Amongst the physical signs of this disease, however, the greatest confidence should be placed in absolute flatness of the percussion note over the level of the fluid. Chapter X., on the lesions of the pleural cavities, is specially good; indeed, if the whole book were similar to this chapter in merit, we should have few criticisms to make. In the differential diagnosis of pneumothorax with a distended stomach, a somewhat frequent source of error, the author lays stress on the fact "if some water be sipped, the tinkle following its entrance into the stomach is very audible." Reference is duly made under the head of malignant disease of the mediastinum to the interesting researches of Gueneau de Mussy in regard to the enlargement of the bronchial ganglia in syphilis and struma, and to the confusion which may be occasioned by this condition.

A short chapter (XIV.) is given on respiratory percussion, mostly taken verbatim from Da Costa's learned article in the *Am. Journ. Med. Sci.* for July, 1875. We are arrested by the statement made in the words of the latter distinguished author, "When in a case of phthisis we find that the

dulness on percussion is no longer modified by fixed inspiration, we have a certain test of the malady having progressed."

Part II., which is much shorter than Part I., deals with the diseases of the heart and pericardium. The first four chapters of this Part, on the processes which develop cardiac affections, and on the symptoms and diagnosis of valvular diseases, are not specially valuable additions to the book. They present no incorrect statements, but they leave the mind somewhat uncertain as to the united signs which shall enable one to make an exact differential diagnosis. In other words, they lack that particular shade of dogmatism, or rather aphoristic statement, which should be a marked feature, in our opinion, of a hand-book for teaching the principles of any science or art. We might continue the analysis of this work chapter by chapter; space forbids. Moreover, the value of it would scarcely justify such lengthy criticism. We took hold of it, pleased with its appearance, and determined to read it through very carefully, as the latest addition to this department of medical literature. It differs from what we have hitherto read in plan and execution. It is no plagiarism, or even a compilation. It usually speaks well for its author, but in some places it is marred by obscure and ill-advised statements. Intermingled with these there is fortunately much that is good, well expressed, and reliable. But the faults are not small ones, and we, therefore, much as we regret to write it, hesitate to recommend it to students. Advanced practitioners may study its contents, and cull from it a great deal that is useful to know and apply, but they should be on their guard not to accept its doctrines, on all points, with absolute faith. If they are not, they would, in our opinion, form more than one erroneous judgment in physical diagnosis. B. R.

ART. XXVI.—*The International Encyclopædia of Surgery, a Systematic Treatise on the Theory and Practice of Surgery, by Authors of various Nations.* Edited by JOHN ASHHURST, Jr., M.D., Professor of Clinical Surgery in the University of Pennsylvania. Illustrated with chromo-lithographs and wood-cuts. In six volumes. Vol. I. New York: William Wood & Co., 1881.

IN the rapid development which our country has enjoyed in various departments of science and art during the lifetime of the present generation, it is no small satisfaction to be able to claim for American surgery its full share of credit. The natural mechanical tastes of our countrymen, and the practical bent of their character, have enabled this branch of medicine to overcome many defects of early education, and under the improved methods of study and teaching our surgical literature is beginning to take that place in the estimation of the world which is its due. The great activity and enterprise, and the vast numbers of the men of which our profession is composed, have given an enormous impulse to medical literature, now beginning to show fruit of which we have justly a right to be proud. One is led to reflections in this vein in perusing the opening volume of a great international work on surgery, brought out under the patronage and largely with the co-operation of American surgeons.

The question which naturally first presents itself relates to the necessity

of the international element in a work of this kind. Why would it not have been better to follow the customs of England, France, or of Germany, in producing a purely national book? Perhaps it may have occurred to the projectors that American surgeons were not yet quite equal to such a task; but we are more inclined to think that the true spirit of American enterprise impelled them to strike out from the beaten path, and adopt a plan wholly new. The idea of incorporating in a single comprehensive work, which should be made available by translation to several nations, the views of the most prominent men of each country, is certainly original. It has the great advantage of collecting the newest and best work from the various parts of the world, and putting it into an available form for general distribution. Whether the present work succeeds fully in realizing this expectation or not, it will be an experiment of the greatest interest and value to the medical profession, and prove one productive of most beneficial results.

The medical public has already been informed as to the detailed plan of the Encyclopædia, as it is called, through the circulars which have been distributed by the publishers. Beginning with the history of surgery and what is called general surgery, the editor, with a few exceptions, places next in order the diseases and injuries of certain tissues, and concludes with regional surgery. The term "general surgery" seems to us hardly satisfactory, but it has this advantage, that it enables the editor to place under this head as little or as much as he pleases. On the other hand, the somewhat capricious intermingling of such constitutional affections as syphilis, scurvy, hydrophobia, with articles on operative surgery, wounds, and amputations, leaves a sense of confusion in the mind as to the bearing which these subjects have upon one another, and their appropriate place in a scientifically arranged pathology.

We notice a few unimportant departures from the proposed scheme in the volume now before us, if we except what was to have been the opening article: we should have been glad to see the "Nestor of American surgery" in his appropriate place on this occasion. The international character of the work is not fully sustained in the present volume, there being but four foreign authors out of seventeen. We find in the prospectus many well-known names, such as Verneuil, Bryant, Stricker, Bellamy, Watson, Adams, McCleod, Allingham, Duplay, and Volkmann. England appears certainly to be well represented, but we should have been glad to see a larger representation from France, and we regret that the editor has not availed himself more freely of the large number of pathologists which Germany could have furnished, and whose services such a work as this could hardly afford to do without.

The book opens with an article on disturbances of nutrition and the pathology of inflammation, by Dr. S. Stricker, the well-known author of the text-book on histology, and Professor of Experimental and General Pathology in the University of Vienna. Not only do his views represent a pathology well in advance of that to which the readers of this class of books have been accustomed, but we get here from the fountain-head a great deal of original work from one of the most eminent pathologists of the day. The anatomy of the capillaries, sketched at the beginning of this article, and the analogy between their contractility and the action of glands, are points which indicate the high character of the work. The study of the vaso-motor system of nerves has made great advances during the past fifteen years, and every year our knowledge of this complex

physiological problem is still further increased; and now the pathologist makes bold to say: "I would soon advance the opinion that no physiologist, no pathologist, no therapeutist, can follow his profession in a precise manner, without being familiar with this field of inquiry." Professor Stricker certainly does his best to make the subject clear to his readers. We shall resist the temptation to summarize his able exposition. Space would hardly permit more than calling attention to the prominence which he gives to that group of the vaso-motor nerves which do not restrict but actively cause the vessels to dilate; to the function of the bloodvessels of the abdominal viscera as the principal regulators of the blood pressure ("an animal with complete paralysis of the vaso-motor nerves of the abdominal viscera therefore bleeds to death, as it were, into its own abdominal vessels"); to his own experiments demonstrating the existence of the dilator nerves in the posterior sensory roots which enter the sciatic; or to his arguments, by which he shows that the hyperæmia of inflammation is caused by direct local irritation of the dilators, and not by a paralysis of the constrictors, thus giving by far a more simple explanation of certain of the cardinal symptoms of inflammation than has hitherto been offered. The traditional mode of characterizing the process by these symptoms is discarded by the author, who contents himself with giving two main characteristics, namely: an active hyperæmia and an active tissue metamorphosis. We may not always have swelling or pain, and it is doubtful whether there is an actual production of heat, the elevation of temperature being due to the accelerated blood current.

To understand fully the attitude of Stricker towards the question of inflammatory changes in the tissues it is necessary to have been familiar with the standpoint of cell pathology as it existed at the time of Cohnheim's exposition of his theory of the migration of the white corpuscles of the blood. The work of many eminent young pathologists of that day was steadily leading in this direction. Recklinghausen had observed in Wurzburg the amœboid movements of certain cells during the inflammatory process, while Stricker at Vienna, although he had noticed the occasional passage of red corpuscles through the walls of vessels, was seeking in the changes observed in connective-tissue cells for an explanation of the origin of the small round cells of the inflamed tissue. Cohnheim sought to overthrow Virchow's theory of cell proliferation, but Stricker, although he now confesses his views were at that time in a very rudimentary state, still stoutly resisted the new doctrine, and has continued to do so since, each new observation having served to complete and elaborate what he now characterizes as the doctrine of tissue metamorphosis. It is not a matter of surprise that there should be a tinge of strong partisan colouring in an article prepared by the chief of one of the contending factions. But making all due allowances, we must nevertheless confess that Professor Stricker seems to have exceeded his privileges in taking advantage of this opportunity to prepare what might be considered a treatise on general histology and the structure of cells, rather than an exposition of the various pathological problems of inflammation. The views of Cohnheim, which have been so prominent a feature of pathological writings during the past fifteen years, are thus disposed of, doubtless to the surprise of many readers: "The migration theory has proved to be fruitless. It has made no progress since 1867, and in regard to the doctrine of inflammation it cannot make any progress; for it denies the active processes. But the doctrine of tissue metamorphosis has made constant advances, and every new step which I have

taken in the course of the last decade has proved to be an argument against the migration theory." It would seem at least appropriate that some account of this process should be given, and that an explanation of Cohnheim's erroneous views, if such they be, should be attempted. The battle-ground on which this question has been mainly fought out is the cornea, the transparent structure of which has made it peculiarly favourable for histological study. Considerable space is given by Stricker to the study of this tissue and its behaviour in inflammation. Without undertaking to rehearse the various explanations which have been given of the striking pictures obtained by different reagents, we may briefly say that our author has come to the conclusion, as the result of prolonged observation, that the stellate cells, known as corneal corpuscles, are not to be regarded as permanently distinct structures, but that the adjacent basis substance in which they lie cannot always be separated from them. "One and the same strip of territory is at one period a portion of the body of a cell, or of a process; at another period a part of the basis substance." The basis substance is, like the cell, living matter, and, under the stimulus of inflammation, it, like them, may be converted into amœboid cells, or, as he would prefer to say, into *amæboid substance*. "It is accordingly the tissue itself which is transformed into pus corpuscles." In his view the branched cells of the cornea can no longer be regarded as fixed cells; indeed, he is not prepared to say that in the normal tissue in the fresh state they exist at all! What is true of the cornea he undertakes to prove at length by analogy to be true also of all other connective substances, bone, cartilage, etc. The fibrillar changes which take place in the various tissues also occupy a large portion of the article. A few general closing remarks dispose of the epithelium and endothelium, the process of healing and repair.

The other aspects of inflammation, including also some of the ground occupied by Stricker, are treated in an article entitled "Inflammation," by Dr. William H. Van Buren. We confess to a little surprise at seeing the name of this able teacher in a field so widely different from those with which we are accustomed to associate it. It would have seemed, perhaps, more appropriate to entrust such a department to the hands of some coming Paget or Sanderson. We must acknowledge, however, that there are very few writers besides the author in question who could have prepared an article requiring such a diversity of knowledge and experience of so high a grade. That portion which is devoted to the causes of inflammation is, perhaps, the best in the chapter, and possesses a special value in giving a most complete summary of the work which has been performed by Pasteur, Koch, and others in the study of the relations of organisms to disease. The studies of Koch, translated by the Sydenham Society, and the work of the International Congress have begun to shed light on this obscure domain of pathology. The work has been taken from the hands of the pseudo-pathologists and romancers, and has been put upon a basis which deserves the careful attention of every intelligent physician. It now appears that there is not only an organism which is peculiar to anthrax and another to chicken cholera, but one also which produces septicæmia in mice and one which produces gangrene in the same animal. In rabbits similar diseases are caused by the presence of certain well established forms of microbia. The connection of spirilla with relapsing fever in man is generally received. It is true that the facts already obtained are few in number, isolated from one another, and of

extremely limited application, but they are nevertheless of the greatest interest as showing that science has finally got within its grip an extremely rebellious subject, and that we have a right to hope for a revolution in our ideas of the etiology of a most important class of diseases, which may be productive of incalculable benefit to human beings. It will be a part of the curious history of our times that when the scientific world was on the eve of such important discoveries, its leaders were obstructed in every possible way in their work by the zeal of indiscreet reformers.

The anatomical part of the subject is perhaps the least interesting in the article, and we turn with pleasure to the final sections on treatment, where our author writes as one having authority. There is to be found a calm, judicial review of modern methods and ancient as well, many of the latter receiving finally an official death-blow. The following sentence is an illustration: "Meanwhile antiseptics are gradually taking the place of antiphlogistics; the latter cease to be thought of in proportion as the former grow in the confidence of the profession; and the opinion is, on the whole, steadily gaining ground, that antiseptics constitute the best preventive measures against unhealthy inflammation." Again, "It is a common practice to cover an inflamed surface with mercurial ointment before applying a poultice. This is based on the wide-spread belief, founded upon its singular efficiency in syphilitic inflammations, that the drug has a certain power in mitigating the intensity of the inflammatory act, and in rendering exudations more readily absorbable. There is no positive evidence that mercury possesses this power except in syphilis." In regard to the anti-inflammatory virtues of aconite, digitalis, veratrum viride, and perhaps we need hardly add tartar emetic, Dr. Van Buren is equally sceptical.

One turns with considerable interest to the article on septic fevers. This is written by Dr. Delafield, of New York, and is entitled Pyæmia and Allied Conditions. Although it consists of but nine pages, it is adorned with no less than two large coloured lithographic plates, which, as they show pathological appearances (metastatic abscesses) familiar to most students, are, we presume, intended to do a sort of chromo work for the whole volume. Dr. Delafield is evidently at home, both in the literature and the pathology of the subject; and what he has to say will be of special interest to every student in this department of pathology; but the confusion which still remains in the minds of English readers in regard to the classification of the different varieties of surgical fevers, and their relations to the healing of wounds, renders it particularly desirable that an attempt should be made to give to each a more defined position. The general impression left by this article is that, clinically as well as pathologically, there is but one disease of protean aspect and of uncertain origin. This is hardly a fair statement of the case, and is a position which tends to throw the question back into the chaos from which modern science had, to a certain extent, succeeded in rescuing it. It is true that the names septicæmia and pyæmia now no longer express what was originally meant by them, but this is no ground for placing the entire group under the latter heading. There is no attempt to bring out the fact that a form of malignant fever may be developed when no suppuration exists, and that during that process we have an equally malignant variety accompanied by clinical symptoms and pathological changes, which present sufficiently destructive peculiarities to authorize its recognition as a separate disease. Undoubtedly we

find cases in which the two forms seem to blend, or in which the symptoms are not sufficiently characteristic to enable us always to make a positive diagnosis during life, yet more than one of the cases cited to emphasize this uncertainty could, we think, have a different interpretation from that for which they are designed.

For the practical surgeon it is important to recognize the special conditions under which these forms are likely to develop; this is not clearly set forth, and there is much that is confusing in his method of treating this part of the subject. It is not definitely stated, for instance, what symptoms almost invariably accompany that form in which we find metastatic abscesses, or under what circumstances or stage of the healing process these are likely to occur. The statement of the treatment of these fevers is equally unhappy, and betrays a lack of clinical experience. The view that "treatment is of no avail" would hardly be received by the majority of surgeons, and we feel sure that Mr. Lister would object strongly to the statement that he had "devised a system of dressing based on the use of carbolic acid." We are encouraged to indulge in a critical vein, as we find that the editor has felt called upon to add to and comment upon some of the author's work.

Not among the least interesting features of this volume is an article by Verneuil on the reciprocal effects of constitutional conditions and injuries. The nature of the soil in which the surgeon works is often overlooked in estimating the advantages of a special method, or a favourite operation. The tendency of the surgical mind is to become impatient of the somewhat plodding ways of his medical colleague, of preliminary examinations for supposed disease, none of the external manifestations of which may show themselves, and when we read of the baneful effects of arthritism, scrofula, hepatism, nephrism, cardism, syphilis, and the long list of affections cited by the author upon wounds and operations, we shudder to think of the livers, the kidneys, and lymphatic systems which have quietly succumbed beneath the knife of many a "fine operator." It has been said, and perhaps well said, that to kill a man is a hard thing to do, and one is often surprised to see how many a frail creature or physical "dead beat" will survive the most appalling surgical experiences. On the other hand, we have perhaps yet to learn whether a more careful consideration of constitutional conditions may not prove a more important factor in surgical statistics than improvements in methods of operating or treating wounds. The principal affections which our author discusses are arthritism, cancer, scrofula, tuberculosis, scurvy, syphilis, malaria, alcoholism, diseases of special organs, pregnancy, and old age. The relations of these diseases to surgery appear to have been an object of special study by him, and although he has felt himself called upon to present only the dark side of the subject, we commend his teachings to the thoughtful perusal of the practical surgeon.

Dr. Alfred Stillé's article on Erysipelas is perhaps the most scholarly in the book, and from a literary point of view is an excellent model of the style suited to such a work. The author very properly does not commit himself definitely as to the causes of erysipelas. He is, however, an earnest believer in a specific contagium, which may enter the system either by a lesion of the integument, or through the mucous membranes, although he would assign to certain external conditions an influence in the production of the disease. The effects of heat and cold, of damp weather, draughts of air, and the east wind cannot be wholly ignored by any sur-

geon of experience. On the other hand, the experiments of Koch, as we have already seen, have given some definite results, which, although extremely limited, must, we think, be given an important place in the study of the etiology of erysipelas. Our experience of this disease inclines us to the opinion of those who believe feebly in idiopathic forms of the disease, and we are inclined to seek some abrasion or lesion as the point of entrance of the poison.

The article on hydrophobia, by Dr. W. S. Forbes, is not so satisfactory as we have a right to expect after the experience gained during the past few years. The physiological pathology is a point which was ably exposed in a very valuable article by the late Dr. T. B. Curtis, which the author appears to have overlooked.

Mr. Butlin, of St. Bartholomew's Hospital, contributes a surgical study of scrofula and tubercle. His pathology is modern, and his experience sufficiently extensive to make a very interesting article. We are somewhat surprised that the article on Rachitis has not been given to a London surgeon, in view of the great prevalence of the disease in that city, but we are not disposed to complain of a subject confided to the care of so able a writer as Dr. J. Lewis Smith.

The article on Scurvy has been appropriately written by Dr. Philip S. Wales, the Surgeon-General of the U. S. Navy, and we should class it with Dr. Stillé's article in point of literary quality. Dr. Agnew is not, perhaps, at his best on such a subject as the General Principles of Surgical Diagnosis. This, and the article on Operative Surgery in General, by Dr. J. H. Brinton, seem to us attempts to cover ground which hardly comes within the scope of such a work as this. Most of what is written belongs to the clinic or lecture room, or may be easily interpolated in other articles, and in fact a good deal of what is said can be found elsewhere. We can, however, be sure that the authors have made the most of their subjects. Dr. Henry M. Lyman's "Anæsthetics and Anæsthesia" is a very valuable contribution to that subject. The historical portion leaves little to be desired in the clearness and fairness of the statement. The phenomena, the physiology, and the accidents of anæsthesia all receive careful attention, and the chapter closes with a very imposing description of the properties of anæsthetic substances. An article on Minor Surgery, by Dr. Charles T. Hunter, and an article on Plastic Surgery, by Dr. Christopher Johnson, Emeritus Professor of Surgery in the University of Maryland, both of which are very practical and amply illustrated, also appear.

The volume closes with an exceedingly interesting and valuable article on amputation, by the editor, Dr. Ashhurst. The history of amputation displays to advantage the author's erudition, and is illustrated with woodcuts, showing many curious methods and appliances. It is preceded by a brief defence of the operation so often designated as the *opprobrium* of the art, in which he espouses a phrase of older writers, who dubbed it "*the humane operation.*" Under the leading conditions calling for amputation, we notice as of special interest cases of laceration caused by wild animals, several of which are reported. The rule given that no amputation should be undertaken until after the complete establishment of the line of separation hardly coincides with the views of a distinguished surgical authority of Philadelphia, who lays down the rule, if we remember rightly, that in idiopathic gangrene one should wait for the line of demarcation to form; but in traumatic gangrene one should operate immediately. Yet, in some cases, as in the "traumatic or spreading gangrene," our author does recom-

mend amputation at a point sufficiently removed from the disease. We think a better rule would formulate itself somewhat thus: if the gangrene remains a local affection, the surgeon should await the formation of a line of demarcation; but if it shows a tendency to spread rapidly, amputation at a sound point should be resorted to, or free incisions should be made in the dead tissue to give the poisonous fluids and gases an opportunity to escape. For it is to the latter agents that the transmission of the mortification from injury to adjacent sound parts is chiefly due. We notice that pyæmia is not mentioned as a condition calling in certain cases for amputation, although wounds from poisonous bites have a place upon the list; in many continental cities the operation is performed for the purpose of removing the source of pyæmic poisoning, and is held in estimation by many surgeons. The instruments given are well chosen, although we should hardly feel satisfied with the cross-spring catch or slide-forceps delineated. The long, narrow, straight armed toothed forceps, without catch or combination of any kind, have always seemed to us a much more "surgical" instrument. Dr. Ashhurst is evidently a conservative in his methods of treating wounds, and also very methodical, for we find that he always uses twisted metallic sutures, and is in the habit at the first renewal of a dressing after an amputation of trying every suture in succession, and untwisting it a little if it seems to be applied too closely. We would not have it supposed that we intend to decry the amount of time and personal attention of the surgeon which this implies. It is, doubtless, habits like these which enable him to obtain such excellent results without resort to "antiseptic dressings," and to maintain the primitive simplicity of that school of which the good Samaritan was a disciple. Although Dr. Ashhurst does not count himself among the followers of Lister, we think an acknowledgment is due, in such an article as this, to the work which this great surgeon has accomplished. That the so-called antiseptic dressing is not a panacea for all the ills which wounds are heir to would hardly be maintained by its most ardent supporter, and we think its author even would allow that it is not the only method by which they may be averted. But we venture the surmise that were our good friend of the Scriptures to fall among the *personnel* of the average hospital staff, he would eagerly avail himself of a few of the modern safeguards against human carelessness. The remarks on the mortality of this operation are extremely interesting, and contain a number of valuable tables, counting amongst them a list of 100 consecutive cases occurring in the author's practice. Among the latter are three amputations at the hip. The number of deaths in Dr. Ashhurst's cases was but 28. Analyses of statistics are given to show the influences of age, sex, the period of the operation, and so forth upon the results. They are features of interest, not only on account of the useful information which they convey, but also as specimens of intelligent and thorough work. There are also tabulated by Dr. F. C. Sheppard 633 cases of hip-joint amputation. Of special amputations, those about the ankle and knee present the greatest interest, for it is in these regions that surgical ingenuity has had the most favourable opportunity to develop itself. The various methods employed at the knee-joint are conscientiously enumerated, leaving, perhaps, too much doubt in the mind of the reader which of them has best stood the test of experience. On the other hand, we do not find mentioned one of the most important of the amputations at the ankle-joint, that described by Soupart, and to our minds giving decidedly the best stump. Tripier's modification of Chopart's method is

barely mentioned, and the principle by which the disadvantages of the latter operation are overcome is not alluded to. It has been generally supposed that the malposition of the stump, producing a tendency to ulceration, was caused by the action of the muscle pulling on the tendo Achillis. It is now recognized to be due to the obliquity of the os calcis, the lower surface of which is made horizontal by a cut through the bone.

We are disappointed in the illustrations accompanying this volume: although we are spared the time-honoured transmittenda which publishers are wont to cling to with an almost paternal affection, those which take their place have a certain pre-Raphaelite flavour which does not reflect credit upon the progress made in this department of art. Considering the vast amount of money annually spent by the profession in this country in medical literature, for we believe there is no better market in the world, we think it has the right to demand the highest grade of excellence in all departments of the publisher's art. We are disposed also to criticize gently the size of the volume, which renders the perusal of an article in one's easy chair, with the evening cigar, a task requiring the exertion of no small amount of muscular force. The large and handsome type, however, makes reading easy to old eyes, and the volume presents the elegant and dignified appearance which a work of such great importance to surgery should possess.

J. C. W.

ART. XXVII.—*A Treatise on Diseases of the Eye.* By H. D. NOYES, A.M., M.D., Professor of Ophthalmology and Otology in Bellevue Hospital Medical College; Surgeon to the New York Eye and Ear Infirmary; President of the American Ophthalmological Society, etc. 8vo. pp. 360. New York: Wm. Wood & Co., 1881.

THIS work, which is one of the Wood series, is something more than a hand-book. Though it is condensed into a comparatively small compass, its author not only gives us the results of his own extensive experience, but has carefully searched the modern records of the literature of his subject, and presents an excellent epitome of the ophthalmic surgery of to-day. Brief statements are given of the anatomical structure of the different parts of the organ, and the discussion of important points in physiology and pathology is sufficiently full for all practical ends. The subjects of paralysis of the external muscles of the eye and of the various forms of optic neuritis and atrophy, so interesting and important in their connection with general medicine, are ably and quite freely discussed.

Though the author has, of course, some views of his own, there are none that can be called "whims;" the directions for treatment are practical and sound, and represent fairly the practice of ophthalmic surgeons in America. There are very few exceptions to this rule; we think, for example, that the majority of ophthalmic surgeons commence with a weaker glass than $\frac{1}{48}$ or $\frac{1}{36}$ in presbyopia, and that $\frac{1}{72}$ or $\frac{1}{60}$ is more frequently the first prescription. A $\frac{1}{36}$ can rarely be continuously used with entire comfort in the commencement of simple presbyopia; and a glass stronger than is necessary to give sharp definition at the accustomed reading distance is thought by some good authorities, not only to render the wearer unnecessarily dependent on its aid, but to actually hasten the loss

of the remaining accommodative power. Iodide of potash is entirely omitted from the list of remedies in parenchymatous keratitis, perhaps inadvertently, as it is very generally used in this disease, which, in a large proportion of cases, is a form of tertiary syphilis, and is more influenced by the iodide than by any other medicine. Inunction, which is the only form in which the use of mercury is recommended, would be found worse than monotonous in the long, weary months of treatment that this disease demands.

Not much is to be said of paper and print, except that they are in accordance with the price of the book, the subject-matter of which deserves to be presented in a more elegant form, and to command a higher price. Though the cuts generally answer the purpose of illustration fairly well, they are far from being good specimens of high art; the coloured plates of the fundus are probably much the worst that have ever appeared in public, and none of the four portraits of the author do him justice. In spite of these drawbacks, Dr. Noyes is to be congratulated upon having produced a really good book, which will take rank at once among the best text-books on the subject in our language. The general practitioner can depend upon it for all that his practical needs require, and the specialist will often find it a convenient reference.

It is to be regretted that many who will want the book cannot obtain it without paying for eleven other books that they do not want.

G. C. H.

ART. XXVIII.—*On the Rapid Method of Cure of External Aneurism by means of the Elastic Bandage. With a table of Seventy-two Cases.* By A. PEARCE GOULD, M.S., F.R.C.S., Lecturer on Anatomy at the Westminster Hospital Medical School, Assistant Surgeon to Westminster Hospital, Surgeon to the Northwest London Hospital. 8vo. pp. 52. London: J. W. Kolckmann, 1882.

THE dangers attendant upon diseases of the arteries have always been recognized by the medical profession. Much attention has been devoted to the subject, and the methods of treatment to be adopted in cases of aneurismal dilatation of the vessels have been many and varied. When the application of a ligature in the continuity of the vessel was suggested and practised, it marked one of the most decided steps taken in advance in the whole domain of surgery. Great as have been the successes attendant upon that operation, many as have been the lives saved by it, yet the dangers attending its performance have always been considerable, and have led to many attempts to substitute some other method of procedure.

When Esmarch introduced the elastic bandage to the profession as a means of controlling hemorrhage, its proven efficiency very naturally led to its being thought of as a suitable agency for the treatment of those external aneurisms to which it could be applied. The anticipations formed of its efficiency have not as yet been fully realized, and to examine into the cases recorded, to study the causes of failure in some, while others were brilliantly successful, is the task which Mr. Gould undertook in a paper read in the Surgical Section at the International Medical Congress held in

London last summer, and which he has further extended in the present pamphlet.

The importance of the subject is a sufficient apology for speaking of Mr. Gould's work at some length. The first chapter is occupied with an account of the rapid method of cure by digital compression, introduced by Murray in 1864, and of the case in which Dr. Walter Reid first and successfully applied the elastic bandage. The details of this case are important, as showing that Dr. Reid appreciated the principles upon which the successful application of his method must depend, and from which it would appear that but little variation can be safely or judiciously made.

In a case of popliteal aneurism Dr. Reid applied an elastic bandage from the toes to the junction of the middle and lower thirds of the thigh, taking care that it was quite loose immediately over the aneurism itself. The elastic tubing was then wound round the thigh just above the bandage, and the latter removed. After fifty minutes, the pain at the seat of constriction being severe, a Carte's compressor was adjusted to the main trunk at the pelvic brim, and the tubing removed. This compressor was then kept lightly and intermittently applied till the next evening. The patient was cured of the aneurism, but died of bronchitis, etc., nine months afterwards. The rationale of this treatment is simple. The circulation in the limb was totally arrested, with the aneurism full of stagnant blood. Rapid coagulation ensued, and the application of the compressor so modified the direct arterial flow as to prevent it breaking up and washing away the freshly formed coagulum, while the establishment of the general circulation in the limb by anastomosis was not interfered with after the removal of the tubing.

The second chapter is devoted to a study of the pathology, or history of the formation of blood clot. It is well shown that, while most of the methods of treatment adopted aim at the gradual obliteration of the aneurismal sac by the deposition of layers of fibrine, in some, and in the one now under consideration, the object is to obtain the immediate formation of a blood-clot, containing corpuscles as well as fibrine, filling the whole cavity of the aneurism. This is unquestionably the end aimed at by Dr. Murray in the method of digital compression introduced by him, but it is quite certain that in very many cases where it is practised, the successful result following long-continued compression is owing to the deposit of successive layers of fibrine within the sac. So when a ligature is applied, the collateral circulation is speedily established, and a recurrent blood stream soon flows into the aneurismal sac, or at least impinges upon the fresh coagulum which has formed in it, but as it is comparatively slow and feeble, with the result that continued deposition of fibrine takes place. This at least is the favourable issue. But often the returning current is sufficiently strong to wash away the clot already formed. In this lies the explanation of many failures of digital compression. A feeble stream is allowed to flow into the sac gradually disintegrating the clot first formed. Whether the compression exerted completely arrests the circulation, or does so gradually and partially, in either case no attempt is made to control the collateral circulation.

In Reid's method the plan is totally different. The first effect of the elastic bandage applied to the foot is to completely empty the capillaries, as well as the larger vessels, and to form a dam beyond which the circulation from above cannot pass. The effect of this is to distend the sac and the artery with stagnant blood. Then the bandage passing lightly over

the tumour, so as not to express its contents, is again applied firmly above, and if necessary supplemented by the use of the tube, to the complete stoppage of the circulation in the whole limb. It is left in this condition for about one hour, by the end of which time the blood within the aneurism has, in all probability, coagulated *en masse*. Then compression being applied to the artery above the tumour, and the direct circulation being more or less perfectly controlled, the bandage is removed, and the anastomotic circulation allowed to establish itself. The continued compression upon the main trunk meantime diminishes the current, or entirely prevents the blood passing into the aneurism with force sufficient to wash away, or break up the clot. In favourable cases that part of the clot contained in the artery undergoes organization, while that in the sac is partly absorbed, and partly remains as disintegrated material.

It will be seen that in Reid's method the important point is to obtain complete stasis of the blood, and various modifications have been made with the object of securing this advantage without some of the disadvantages attached to the proceeding. Thus where the sac has been thin, and the surgeon feared its too great distension if the elastic covered the whole extremity, the bandage has been applied merely just below the aneurism, while compression was made upon the main trunk to prevent the systolic impulse disturbing the integrity of the clot.

Mr. Gould does not think that we can decide why coagulation takes place, but that it always does so in a distended aneurism is proven by experience, and the results shown in his table of cases.

As has been before said, the destiny of the clot in the trunk of the artery, and of that remaining in the aneurismal sac, is very different. In the latter it undergoes more or less perfect absorption, and the sac contracts upon it, but in the former it becomes organized, and secures permanent closure of the vessel.

Mr. Gould says, "The permanent cure of the aneurism is brought about by organization of the thrombus in the artery rather than by any change in the aneurism itself, the clot in the aneurism being of use mainly as a means of securing a thrombus in the artery," and "the process of cure by this treatment depends, then, first, upon clotting of the blood, which commences in the aneurism, and spreads into the artery; and, secondly, upon the organization of the clot in the artery."

The causes of failure in this operation are two: either the blood does not coagulate, or the coagulum in the artery does not organize. Mr. Gould proceeds to an examination of the reasons for these failures, and the result is, that, while in some cases the failure may depend upon an aplastic state of the blood, in the very great majority it originates in allowing the blood-current from above to impinge with too great force upon the newly-formed coagulum, which must undergo shrinking by the loss of serum involved, and be thereby loosened in some of its attachments.

Chapter IV. is occupied with a consideration of the objections which have been urged against this method. While Mr. Gould recognizes the fact that the application of Esmarch's bandage sometimes increases the blood tension, he thinks that it does not always do so, and is of the opinion that, while a careful examination should always be made of the arterial system beforehand, there is not sufficient force in the objection to interdict its use. The same precautionary measure of an examination of the circulation is regarded by Mr. Gould as a sufficient protection from the risk that fatal syncope may follow the removal of the bandage. The continued compression

exerted upon the main trunk for the protection of the newly-formed clot should at the same time prevent a dangerous flow of blood into the capillaries, dilated as they are from vaso-motor paralysis. But, as a matter of course, any measure is dangerous, when a feeble circulation, depending upon diseased conditions, exists. Case No. 30 in the table, that of Dr. Weir, would appear to have been a case in point. A tendency to cause gangrene has been urged as an objection against the elastic bandage. Two cases appear in the table, but Mr. Gould thinks that an examination into their details does not warrant the conclusion that the form of operation was accountable for the ill result. That ecchymoses are apt to form over the tumour has been noticed by several observers, but here, also, Mr. Gould is satisfied that protection of the skin, by moderately firm pressure, will avert the evil.

Mr. Bryant has suggested that there may be a risk of this mode of treatment setting up albuminuria, but Mr. Gould, after examining the reasons given for this fear, thinks that it will be found to be groundless, and that the observed facts do not warrant it, inasmuch as the increased blood tension is of very short duration. Mr. Gould does not think, either, that there need be any fear of using ether in these cases, preferring it to morphia, which is less effectual in controlling the severe pain attendant upon the procedure. Mr. Gould's table shows no case in which injury of the nerves was produced by the bandage, while, in but one case, has its use resulted in rupture of the aneurismal sac. The objection that the proportion of failures has been large where this method has been resorted to, is well shown to lie with equal force against other methods of compression, and Mr. Gould thinks that many of the failures can be distinctly traced to a want of appreciation of the rationale involved, and a neglect in carrying out some of the details.

It will be evident to any one reading this chapter that Mr. Gould occupies the position of a special pleader rather than of an impartial judge, yet we would not be understood as implying that he has not fairly met the objections urged against the use of the elastic bandage. But, as he is an earnest advocate for the method, he has very naturally shown a disposition to look leniently upon the grave charges brought against it.

In Chapter V. Mr. Gould subjects the seventy-two cases he has tabulated to a careful analysis upon the following points: 1. Age of patients. 2. Constitutional disease. 3. Character of aneurism. 4. Seat of aneurism. 5. Effect of preliminary treatment. 6. The frequency, duration, and exact mode of application of the elastic compression. 7. The duration and kind of subsequent treatment. 8. The subsequent history of the cases in which this treatment failed. 9. The influence of anæsthetics.

Through the details of this analysis, thorough and valuable as it is, we cannot follow Mr. Gould. It will be sufficient to give briefly some of the conclusions at which his study of the subject has enabled him to arrive.

First, the method introduced by Dr. Reid is worthy of further and more extended trial. It has had a large measure of success, is easily applied, and its success or failure, in a given case, is so speedily and easily recognized, that it is well suited for properly selected cases. Its dangers and disadvantages have been much exaggerated, and a judicious selection of cases, with a careful attention to the details of the treatment, will, in great measure, obviate them. Second, in selecting cases to be subjected to this method of treatment, it is of great importance that the vascular system should be otherwise healthy. When practicable, preliminary treatment,

with the object of increasing the coagulability of the blood, should be instituted; to this end a dry albuminous diet, and large doses of iodide of potassium seem to be most conducive. While complete stasis of blood in the aneurism and adjacent artery is essential, it is of much importance that the bandage shall be so applied as to disturb the general circulation as little as possible. On this account, Mr. Gould advises that the blood should not be expressed from the whole limb, as originally proposed by Dr. Reid, but only from that part of it immediately below the aneurism. The stasis thus obtained should be maintained for an hour and a half. Afterwards, and whether a clot has formed or not, the bandage should be removed, and the main artery compressed for from six to twelve hours, either by the finger or by a tourniquet. When the aneurism is large, and growing rapidly, the bandage should be carried lightly over the tumour. Should failure ensue, the prospect of success following other methods of treatment is not impaired by the trial.

On every page of this pamphlet there is manifest evidence of the painstaking care Mr. Gould has bestowed upon his study of the subject. He is entitled to much praise for the thoroughness with which he has done his work, for it is by such labour that a true estimate of any new surgical procedure can alone be arrived at. In this instance Mr. Gould has done much to place the operation, for which, as we have before said, he is an earnest advocate, upon a firm basis. The number of cases submitted to his study is tolerably large. When that number is increased, as it will be, we shall know whether Mr. Gould's fairly deduced conclusions are sustained.

S. A.

ART. XXIX.—*Manual of Diseases of the Skin, with an Analysis of Eight Thousand Consecutive Cases and a Formulary.* By L. DUNCAN BULKLEY, A.M., M.D., etc. Duod. pp. 312. New York: G. P. Putnam's Sons, 1882.

IN this little book the attempt has been made to present the subject of diseases of the skin concisely, and yet with sufficient detail to be of practical value to the student and practitioner. Pathology is introduced but briefly, and no attempt has been made to enter the literature of the subject, or to present or discuss doubtful questions. Differential diagnosis has not been fully entered upon for want of space, and here we think the author has made a mistake, for this is so important a matter, that it will not do to pass it over by merely mentioning in connection with each eruption those with which it may be confounded. Diagnosis is so clearly the groundwork of the most elementary knowledge of diseases of the skin, that we think Dr. Bulkley would have done better to omit some things which he has put into his little manual (*e. g.*, the chapter giving an analysis of eight thousand cases) in order to give a little more fulness to the sections on diagnosis.

After giving short chapters on the study of dermatology, the anatomy and physiology of the skin, nomenclature and classification, relative frequency of diseases of the skin, diagnosis and etiology, Dr. Bulkley goes on to describe the various distinct affections in detail, and concludes with

chapters on diet and hygiene of diseases of the skin, and therapeutics of diseases of the skin.

The classification employed by Dr. Bulkley is essentially that of the American Dermatological Association, now the acknowledged standard in this country, and very like Hebra's classification, which is employed in Germany, and which is winning its way also in France and England. It is indeed a happy day which appears to be dawning in the dermatology of the present, when all the chief teachers of this branch of medicine unite in employing the same classification, and to a very considerable degree a similar nomenclature. This plan, as followed in Dr. Bulkley's book, will enable the student who has made use of it during his studies and in connection with his class instruction, to pass without confusion from it to Duhring when he desires to push his studies further. We regret, however, to observe here and there the use of obsolete and confusing terms, as "syphilitic psoriasis." It would be well if this lumber were once for all put away out of sight.

The discussion of the various affections is brief and terse, but clear, the fault, if any is to be found, lying in the too frequent introduction of synonyms and unnecessarily minute subdivisions, a course which loads the text with those quantities of new names so discouraging to the beginner. The treatment in each case is indicated in a general way in the text, and reference is made by number to the appropriate formulæ to be found at the end of the book.

On the whole, this little work is the best of its kind thus far presented to the profession, and is in all respects far superior to the manuals sent over by our English brethren, upon which we have heretofore been obliged to depend. A. V. H.

ART. XXX.—*A Treatise on the Diseases of the Nervous System.* By JAMES ROSS, M.D., M R.C.P. London, etc. In two volumes. Vol. I. pp. 594, and Vol. II. pp. 998. New York: William Wood & Co., 1881.

THIS is a very ambitious attempt to give an account of the anatomy, physiology, and diseases of the nervous system. There are, in the two volumes, 1600 pages nearly, 285 cuts, and 6 plates. The anatomical descriptions and the illustrative cuts are, for the most part, taken from Landois, Henle, Kölliker, Charcot, Duret, Ferrier, and other well-known sources. The illustrations are, generally, well done. Although having an American imprint, the printing was, no doubt, executed in England. It seems to us a mistake to have so great a disproportion between the two volumes in size—the second volume being nearly twice the size of the first. The necessity for such an arrangement is not apparent, since the "Special Pathology of the Nervous System" is continued from Volume I. Viewed as a whole, the work must be regarded as a treasury of information collected, as we will see, from convenient sources. Symptoms of an intellectual indigestion are manifested abundantly, and heaviness from repletion is an obvious condition of the work. The author seems to us to have laboured over his task, to have carried it along as a grievous burden, and to have been borne down almost by the mass of materials.

In the preface we find the author saying that he contemplated a full bibliography, but abandoned it, in consequence of the great dimensions to which the work had grown. He, however, gives a list of the works in which a full bibliography may be found. We regret to be compelled to add that he has made an unwarrantable use of some of the references in this list, and has displayed a wealth of bibliographical acquirement for which he is indebted to others. We find, especially, that he has not only plagiarized references, but has transcribed paragraphs and sentences without acknowledgment. Several volumes of Ziemssen's *Cyclopædia* have been made use of with a freedom which only a liberal application of quotation marks could warrant. We select some of those to indicate the mode in which a big book may be constructed with little more than mechanical dexterity.

We may begin our examination at various points, but let us first take up Poliomyelitis Anterior Acuta; see page 122, vol. ii. of Ross, and p. 671 vol. xiii. of Ziemssen (Am. ed.).

Ross, ii. pp. 122-3.

The other most notable cases which have been reported at an early period of the disease are those of Roger and Damaschino, Roth, Leyden's second case, Parrot, and Joffroy, and a case briefly reported by Rinecker, which was examined by Von Recklinghausen. No marked changes were discovered in the cord with the naked eye. In some cases the substance of the cord seemed tougher at the level of the cervical or lumbar enlargements, and the antero-lateral column on the affected side appeared atrophied and distorted. On transverse section the anterior gray horns were observed to be more or less discoloured, whitish or reddish, sometimes soft, diffluent, and diminished in volume. The anterior roots at the level of the parts mainly affected were found gray, translucent, and atrophied. . . . In the lumbar region, sometimes on one side only, but usually both sides, an area of softening has been found, in the anterior gray horn, sometimes extending the whole length of the lumbar enlargement, and sometimes only a portion of it in longitudinal extent. The area of softening was sometimes situated toward the centre, sometimes toward the anterior part of the horn, being separated from the surrounding parts by a sharp line of demarcation. . . . The substance of these areas was friable, soft, and disseminated with numerous granulation cells. . . . The nerve fibres and axis cylinders within the area of softening were also found to have entirely disappeared.

Erb, *Ziemssen*, vol. xiii. p. 671.

Observations made *at an early period of the disease* (Roger and Damaschino, Roth, Leyden's second case, Parrot, and Joffroy, probably also the case very briefly reported by Rinecker and examined by Von Recklinghausen) show that sometimes nothing abnormal about the spinal cord can be discovered by the naked eye; sometimes the substance of the cord seemed tougher at the height of the cervical or lumbar enlargements, and there was a slight dwindling of the cord, especially at the expense of the antero-lateral columns. On making a transverse section, the markings were somewhat indistinct, the anterior gray substance was more or less discoloured, whitish or reddish, sometimes soft and diffluent; sometimes a diminution in volume of the anterior gray horns can be shown. The anterior roots—corresponding to the main seat of the disease—are gray, translucent, and atrophied . . . particularly at the lumbar enlargement. Here we find, usually on both sides, though sometimes only on one side, an area of softening in the anterior gray horn of greater or less longitudinal extent . . . sometimes situated more towards the centre, sometimes more towards the front of the horn, and is separated from the surrounding parts by a more or less sharp line of demarcation. . . . Their substance is friable, soft, and disseminated with numerous granulation cells. . . . The nerve fibres and axis cylinders within the area of softening are also found to have entirely disappeared.

ROSS, *Ibid.*, p. 124.

The anterior roots are diminished in size, and show signs of degenerative atrophy when examined microscopically. Observations have been made, from seventeen to sixty-one years after the origin of the disease, by Cornil, Prevost and David, Vulpian, Lockhart Clarke, Charcot and Joffroy, Petit fils and Pierret, Leyden, Gombault, Déjerine, F. Schultze, and others.

ERB, *Ibid.*, p. 673.

The anterior roots are diminished in size, atrophied, and under the microscope show the signs of degenerative atrophy. . . . We have such observations, made between seventeen and sixty-one years after the origin of the disease, by Cornil, Prevost, Vulpian, Lockhart Clarke, Charcot and Joffroy, Petit fils and Pierret, Leyden, cases 1 and 3, Gombault, Déjerine, F. Schultze, and others.

These extracts are fair specimens of the close adherence of Ross to the work of Erb. In fact, the matter contained in the pages 111 to 126 inclusive, on the subject of poliomyelitis anterior acuta, are almost entirely taken from Erb, some changes of expression being introduced now and then. We do not find any allusion to Erb, any quotation marks, or other evidences of indebtedness. In the chapter on myelitis the appropriations are numerous and extensive. Some alterations in phraseology are occasionally made, but sentences and whole paragraphs are appropriated and exactly reproduced. If the reader will now turn to the chapter on myelitis in Ross's book, and compare it with Erb's treatment of the same subject in Ziemssen's *Cyclopædia*, vol. xiii. page 393 *et seq.*, he can verify the extracts below.

ROSS, *Ibid.*, p. 399.

As the disease progresses, the affected parts become paler and softer. . . . The change of colour from red to yellow is due partly to the diffusion and alteration of the colouring matter of the blood, and partly to the fatty degeneration of the medullary sheaths, and the formation of masses of fat granules. . . .

Owing to the continued process of fatty degeneration, the colour becomes progressively whiter, and the diseased portions assume a creamy or milky appearance. The medulla now swells up above the cut surface and assumes a pulpy or even fluid consistence, and often flows out of the sac of the pia mater. After a time nothing remains of the inflamed spot but the vascular network and a portion of the hypertrophied septa, between which a softened mass is held that can be readily pressed out.

ERB, *Ibid.*, p. 394.

As the disease progresses the affected spot becomes constantly paler and more and more softened. Its colour changes gradually from red to yellow; this change is due partly to the diffusion and alteration of the colouring matter of the blood, partly to the fatty degeneration of the medullary sheaths, and the formation of masses of fat granules. . . .

In consequence of the accumulation of fatty detritus, the colour becomes progressively whiter, and the entire substance assumes a creamy or milky appearance. . . . The medulla swells up very much above the cut surface, acquires a pulpy, even a more fluid consistency, and often flows out of the sac of the pia entirely. . . . At last nothing remains of the diseased spot but the vascular network and a portion of the hypertrophied septa, between which is a softened mass that can readily be pressed out.

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The absorption of the softened masses continues until all the fluid portions have completely disappeared. Nothing remains but the vascular and connective-tissue network, which are in part thickened and hypertrophied. They

Page 395.

The resorption of the softened masses continues until finally all the fluid portions have completely disappeared. Nothing remains but the vascular and connective-tissue networks, which are in part thickened and hypertrophied;

form a more or less dense, shrivelled, grayish, semitransparent cicatrix which is often pigmented. . . .

More or less extensive collections of fluid may be left behind in the meshes of the cicatrix, and lead to the formation of single or multiple cysts. They usually contain a muddy fluid resembling milk, or more frequently serum. . . .

In some cases the interstitial tissue becomes hypertrophied and consolidated. It increases in thickness and density; the vessels become larger and their walls thicker; the previously softened spot becomes firmer and denser, gray, and semitransparent, and presents a marked contrast in colour and consistency with the surrounding parts.

they form a more or less dense, shrivelled, grayish, semitransparent cicatrix, which is often flecked with pigment. . . . . More or less extensive collections of fluid are left behind in the framework of the cicatrix, and lead to the formation of single or multiple, large or small cysts. They usually contain a muddy fluid resembling milk, or more frequently serum.

In many cases, on the contrary, the interstitial supporting framework becomes in course of time greatly hypertrophied and consolidated. It increases in thickness and density; the vessels become larger, and their walls thicker; the previously softened spot becomes firmer and denser, gray, and semitransparent, and presents a marked contrast in colour and consistency to the surrounding parts.

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In the first stage there is marked dilatation of the capillaries and small arteries, and more especially of the small veins. They are distended with blood, and not unfrequently enveloped in layers of white and red blood-corpuscles arranged in the form of a sheath. . . .

Marked changes are found in the neuroglia. The fibres of the reticulum are thickened and swollen; the network is much denser and more distinct, and in part filled with nuclei and with cells. The glia cells themselves are swollen and increased in number, and often contain several nuclei. Granule-cells in greater or less number are found either in the immediate neighbourhood of the vessels or scattered irregularly in the interstitial tissue and its meshes.

Page 396.

In the first stage we find marked dilatation of the capillaries and small arteries, and more especially of the small veins; they are distended with blood, and not unfrequently enveloped in layers of white and red blood-corpuscles arranged in the form of a sheath.

Marked changes are always found in the neuroglia. The fibres of the reticulum are thickened and swollen; the network is much denser and more distinct, and it is in part filled with nuclei and cells. The glia cells themselves are swollen and increased in number; they often contain several nuclei. . . . We generally find granule-cells in greater or less numbers, partly in the immediate neighbourhood of the vessels, partly scattered irregularly in the interstitial tissue and its meshes.

The same careful appropriation of Erb's work extends on through this section for several pages. The reader may also compare Ross's description of the "Symptoms," beginning on page 273 (vol. ii.) and ending on 277 inclusive, with Erb's account, from page 402 to page 414; also the "Diagnosis" by Ross, p. 289, and the same by Erb, p. 419; and the "Prognosis" by Ross, p. 290, and the same by Erb, pp. 420 and 421. In these portions of the two works the same correspondence will be found; sentences, paragraphs, and current references are utilized by Ross, with trivial variations, from Erb's text.

If our readers will now also compare the chapters in the two works on Tabes Dorsalis, remarkable and extensive correspondences will be seen. We could transcribe pages, but it is useless to encumber our columns with so much. The comparison may readily be made by any one interested in the demonstration. We begin at the morbid anatomy.

Ross, *Ibid.*, p. 237.

. . . A gray or grayish-yellow discoloration may be observed along the posterior median fissure extending almost the entire length of the cord.

Erb, *Ibid.*, p. 531.

. . . We may recognize a gray or yellowish-gray discoloration along the posterior median fissure, at both sides of the same, extending almost throughout the entire length of the spinal cord.

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. . . In the inferior portion of the lumbar enlargement there is frequently only a slight gray discoloration in the external half of the posterior columns; but on ascending it increases in width, so that in the upper half of the lumbar enlargement the discoloration embraces the entire transverse section of the posterior columns. The whole of the posterior columns are usually affected throughout the entire length of the dorsal region, but its extent diminishes again in the cervical portion, and the degeneration becomes limited in the upper cervical region to the columns of Goll. As a rule, the intensity and extent of the morbid process is greatest in the upper lumbar and dorsal portions, diminishing both upwards and downwards from these points.

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. . . In the lowest lumbar division we often see but a slight gray discoloration in the external half of the columns; this increases in width as we ascend, until finally, in the upper half of the lumbar enlargement, the entire transverse section of the posterior columns appears discoloured; this then generally continues upwards throughout the entire dorsal portion, again to diminish in the cervical portion, and finally to be limited to the columns of Goll. In the majority of cases, therefore, the rule holds good that the intensity and extent of the process is greatest in the upper lumbar and the dorsal portions, diminishing both upwards and downwards from these points.

If the reader will now take up the symptoms, he will find that nearly every sentence in Ross's account is to be found in Erb's. The only place where Erb is credited with any statement is on page 224, where his name appears in brackets. We might illustrate the method of manufacture by some extracts, but we have devoted enough space to these few pages. In Chapter III. of the second volume, at page 511, Ross begins the consideration of "focal diseases" by an account of "Occlusion of the Cerebral Arteries." In *Ziemssen's Cyclopædia*, vol. xii., this topic is discussed by Nothnagel. We find here a close correspondence, but, as Ross gives much less space to the subject, he more often paraphrases. As a specimen of this, and to exhibit the mode of his bibliography, we quote the following:—

Ross, p. 517, vol. ii.

Experimental Investigations.

The first experimental researches with respect to the embolic process were undertaken by Virchow, and great additional light has been thrown on the subject by the important experimental and microscopical investigations of Cohnheim. Panum studied experimentally the results of occlusion of cerebral vessels with the view of determining the manner in which death is caused. B. Cohn investigated experimentally various clinical and anatomical points; Feltz studied the results of capillary embolism; while Prévost and Cotard made a series of experiments with the view of determining the relation of occlusion of cerebral vessels to softening.

Nothnagel, p. 193, vol. xii.

Experimental Investigations.

The first experimental inquiries into the subject of thrombosis and embolism . . . we owe to the labours of Virchow. . . . That Panum studied the occlusion of cerebral vessels, especially with the view of determining the manner and cause of death; that B. Cohn investigated experimentally various clinical and anatomical points; whilst Feltz treated particularly of capillary embolism. Prévost and Cotard made a series of careful experiments bearing upon the subject of the obstruction of cerebral arteries, and its relation to softening; and, finally, the important experimental and microscopic investigations of Cohnheim. . . .

Next turn to "Thrombosis of the Cerebral Sinuses," Ross, p. 518, *Ibid.*, and Nothnagel, p. 209, *Ibid.*

Ross.	Nothnagel.
History.—Special attention was first directed to the subject of thrombosis of the cerebral sinuses by the observations of Tonnelé. Many valuable clinical observations with regard to the disease were made by Puchelt, and the attention of Lebert was also directed to it. The treatises of Von Dusch, B. Cohn, and of Lancereaux helped greatly to extend and to systematize our knowledge with respect to this thrombosis; and in more recent times our knowledge has been further increased by the labours of Gerhardt, Griesinger, Corazza, Heubner, and Huguénin.	. . . The credit of having formulated it as a specific disease belongs to Tonnelé. The investigations of Puchelt did not receive the notice which they deserved; those of Lebert on inflammation of the cerebral sinuses attracted more attention, and the more recent treatises of Von Dusch, B. Cohn, and Lancereaux assured to thrombosis of the sinuses . . . and at the same time and at later periods our knowledge of the disease . . . was increased through the labours of various observers; we would refer particularly to those of Gerhardt, Griesinger, Corazza, Heubner, and Huguénin.

If the reader will compare the sections on "Etiology," he will find not only paraphrases, but entire sentences copied. The following may serve as a sample :—

Ross, p. 519.	Nothnagel, p. 212.
Cohn observed a case in which suppurative phlebitis of the cavernous sinuses occurred in connection with purulent inflammation of the deep muscles of the neck.	B. Cohn observed a case in which suppurative phlebitis of the cavernous sinus occurred in connection with purulent inflammation of the deep muscles of the neck.

Every statement contained in Ross's account of the "Morbid Anatomy," on page 522–23, is contained in Nothnagel's account of the same subject, and much of it is *verbatim*. An equally close correspondence is to be discovered in the section on "Symptoms." In the chapter on "Occlusion of the Cerebral Capillaries," the opening and many subsequent sentences are appropriated.

Ross, p. 523.	Nothnagel, p. 223.
Experimental investigations have shown that marked disturbances of the cerebral functions may be caused by occlusion of the cerebral capillaries. . . .	A series of experimental investigations has shown that the extensive occlusion of cerebral capillaries may give rise to even very marked disorders of the cerebral functions.
Symptoms. — The experiments of Feltz and of Prévost and Cotard show that extensive embolism of very fine particles may rapidly induce death in animals by causing diffuse anæmia of the brain.	*Symptomatology*, p. 227. . . . Through the experiments of Feltz, Prévost, and Cotard, that extensive embolism of very fine particles may in animals rapidly induce death, resulting from the diffuse anæmia of the brain.
Morbid Anatomy. Capillary occlusions are, of course, only to be detected with the microscope. Delacour says that, in cases of lime metastasis, a resistance is felt to the knife in cutting through the brain, and rough prominences may be felt on the surface with the finger.	*Pathological Anatomy*, p. 226. The occlusion of the capillaries is, of course, only to be detected with the microscope. . . . In lime metastasis, according to Delacour's description, a resistance is felt to the knife in cutting through the brain . . . while on the cut surface itself small, rough prominences are to be felt with the finger.

We find the same unacknowledged appropriation of material in all parts of the work devoted to morbid anatomy, symptoms, etiology, etc. The various chapters in the volumes of *Ziemssen's Cyclopædia* devoted to diseases of the nervous system have furnished this material. Of the rest of the work, we have before indicated the sources of supply. The expressions of opinion, the names of contributors to particular questions, have alike been obtained by Dr. Ross from these works. He does now and then report a case and express his views, it is true, but his contributions to the subject-matter of the two volumes may be included in less than fifty pages. To call the work "A Treatise on the Diseases of the Nervous System by James Ross, M.D.," seems to us an assumption not warranted by the state of facts above given. In the first paragraph of the preface, Dr. Ross states that "it would be invidious to single out for special mention a few of the many authors I have had occasion to consult; I must, therefore, ask them all to accept the simple acknowledgment conveyed in the insertion of their names in the text." Invidious, truly! The authors referred to owe the insertion of their names in the text to the writers from whom Dr. Ross has appropriated it. R. B.

ART. XXXI.—*A Treatise on Human Physiology, designed for the Use of Students and Practitioners of Medicine.* By JOHN C. DALTON, M.D., Professor of Physiology and Hygiene in the College of Physicians and Surgeons, New York. Seventh edition. 8vo. pp. 722. Philadelphia: Henry C. Lea's Son & Co., 1882.

A NEW edition of this popular text-book will be heartily welcomed by teachers and students, and all the more so when they find a new issue, not only without increase in size, but with an actual reduction of nearly 100 pages. This in itself indicates that there has been a process of judicious winnowing, which a careful comparison with the last edition shows to have been admirably effected, without any material sacrifice.

The section on Physiological Chemistry—always a well-arranged and useful one—has received thorough revision. The old term proximate principle has been abandoned, and much new matter added, particularly on the ferments and albuminous substances. We miss and regret, under "Digestion," the familiar figures illustrating useful points in the comparative anatomy and physiology of this process. The recent observations of Heidenhain, Kühne, and others on the nature of gastric and pancreatic digestion have been incorporated, and there is a pleasing absence of doubtful minutiæ, so confusing to the student. In discussing the coagulation of the blood no reference is made to the important part believed to be played by the colourless corpuscles, or to Buchanan's original investigations, which, as Gamgee has shown, anticipated the more recent views of Schmidt. The chapter on the circulation presents very few changes; a new cut and more extended description of the normal sphygmographic tracing would have been advantageous. Why is there no account of the physiological anatomy and histology of the kidney? We have frequently heard students and others refer with surprise to this omission. The chapters on the nervous system have been carefully revised, and the

author expresses himself strongly in favour of the modern views on cerebral localization. Justice is scarcely done to the opponents of these theories; indeed, they are not even mentioned. The chapter on the sympathetic system has been in great part rewritten, though here, too, we are surprised that the important observations of Goltz are not referred to. The section on reproduction has long been regarded as the strongest in the book. The general standard is maintained in this edition, and new matter has been incorporated. A reference to the early changes in the germ and the mechanism of fecundation, as worked out by several recent observers, would have been appropriate, and the important contributions of Leopold on the physiology of menstruation would have added to the value of the section.

An excellent feature in this edition is the number and beauty of the figures; many of the old ones have been re-cut, and the new ones are of very superior finish. Altogether the work is in every way worthy of the confidence which teachers and students have given it during the past twenty-five years. W. O.

ART. XXXII.—*A Text-book of Practical Medicine, with Particular Reference to Physiology and Pathological Anatomy.* By Dr. FELIX VON NIEMEYER, Professor of Pathology and Therapeutics, Director of the Medical Clinic of the University of Tübingen. Translated from the eighth German edition, by George H. Humphries, M.D., and Charles E. Hackley, M.D. In two volumes, pp. 767 and 861. Revised edition. New York: Appleton & Co., 1881.

A GLANCE at the prefaces to this edition of Niemeyer's well-known Practice, and a comparison of the dates therein set down, cannot fail to arouse the interest of him who gives heed, even in the most general way, to the course of the medical literature of the day.

Over date of Tübingen, October, 1867, the author, in his preface to the fourth edition, informs us that nearly ten years elapsed since the first appearance of his work. Over date of New York, May, 1880, his translators, in their preface to the edition under consideration, among other matters of interest relating to the history of the book, recall the fact that Niemeyer died in 1871, "in the prime of life and mental vigour," *about fifty years of age.*

This text-book, accepted as such all over Germany, where it reached a seventh edition within ten years, and where it still holds its own—known in the original or by translation as a standard work the world over—now reissued in America after a quarter of a century, useful, vigorous, welcome, almost fresh, whilst scores of text-books upon practice have appeared, proved useless, feeble, unwelcome, and stale from their inception, and have been forgotten—this book, if these dates be correct, was given to the world when its author was about *thirty-six years of age.* Well may his translators say that his death at fifty was a great loss to the medical profession! Well may they lament his untiring industry, his rare experience, his great abilities as a teacher! The names that are conspicuous in medicine are the names of men whose industry sprang from the enthusiasm of youth, whose abilities as observers and teachers were

wedded to the vigour of early manhood, and whose experience is to be measured by its fibre rather than by its length. Bright among these names is that of Felix von Niemeyer, of Tübingen.

Some years after his death, an edition of his book was brought out in Germany. The changes in the text were extensive, and much new matter was added. The book, in consequence of the condensation thus rendered necessary, lost much of the charm of style and description that it had owed to the author's pen. The translators have adhered as closely as possible to the original manner, and whilst drawing freely upon the last German edition, have made no attempt to make a close translation of it. They have also made such additions from other sources as appeared to them "*calculated*" to render the work more useful to the "American reader." Among these additions are brief articles upon "Chronic Poisoning by Alcohol and Morphine, as well as upon Wandering Spleen, Paralysis Agitans, Scleroderma, Elephantiasis Græcorum, and Progressive Pernicious Anæmia." A chapter upon Yellow Fever has also been added. This, we are informed, has been compiled chiefly from Bartlett's "Fevers of the United States," edited by Alonzo Clark.

In a full notice of the translation of 1869, which appeared in this Journal in January, 1870, testimony was borne to the excellence of the translation, and the manner in which the work was issued. In the present issue there is no falling off in these matters.

The plan of the work does not include general introductory considerations upon pathology and therapeutics. The first volume treats of diseases of the respiratory organs, of the circulatory organs, of the organs of digestion, of the liver and bile-ducts, and of the spleen. The first chapter begins with the consideration of hyperæmia and catarrh of the mucous membrane of the larynx. The second volume deals with diseases of the urinary organs, diseases of the male and female sexual organs, of the nervous system, of the skin, of the organs of locomotion, and with constitutional diseases.

The progress of medical literature during the last ten years, its specialization and organization, have brought the quarters of the medical world into close and rapid intercommunication with each other, and German modes of thought in science, and German views upon matters of pathology and therapy have no longer the air of newness that they wore when Niemeyer's work first came among us. Moreover, clinical medicine has meanwhile made great gain of knowledge, not alone through investigations within the boundaries of her own proper domain, but also within the provinces of physiology, pathological anatomy, and applied chemistry. Important questions have been settled, obscure points made clear, false theories done away with, errors brought to light, and facts accumulated until the mass of knowledge is beyond the grasp even of a master intellect, and comprehensive treatises upon medicine must henceforth be the work of several authors working together, each in his separate and limited sphere; in other words, for purposes of reference, the system must take the place of the text-book, and the system must not only be new, but it must be constantly renewed.

For these reasons this translation of Niemeyer, too bulky and not quite recent enough for the student, cannot be regarded as desirable as a book of reference for the active clinician, the "busy practitioner," as the professional reviewer, who writes much, reads little, and too often does not see any patients at all, is apt to call his more fortunate brother in medicine.

The well-written additions of the revision fail to bring it up to the standard required by a profession whose unsparing work makes it a niggard of time. Niemeyer's work, despite its graphic descriptions, its lucid and attractive style, its fulness of fact, of thought, its ineffaceable stamp of intellectual vigour and originality, or by very reason of all these, must take its place among medical classics, a monument of its author's greatness. There, where it now rightly belongs, the less tinkering it has had since the hand that wrote it laid it down, the more valuable will it be, and he, who in the future shall desire to know Niemeyer, will turn not to the greatly improved and altered edition of Dr. Seitz, nor to the American translation of 1880, but to the last editions in which the revisions are the work of the author himself.

To-day, when the announcement of the observations of Dr. Koch has bent anew the energies of pathologists upon the subject of the origin of consumption and tuberculosis, the familiar theories of Niemeyer assert their importance. J. C. W.

ART. XXXIII.—*Health Reports.*

1. *Fifth Annual Report of the Board of Health of the State of New Jersey*, 1881. Mount Holly, N. J. pp. 344.
2. *Fourth Biennial Report of the State Board of Health of Maryland, January*, 1882. Frederick, Md. pp. 212.
3. *Annual Report of the Board of Health of the State of Louisiana to the General Assembly for* 1881. New Orleans, 1882. pp. 427.
4. *Third Annual Report of the State Board of Health of Illinois; with the Official Register of Physicians and Midwives for* 1880. Springfield, 1881. pp. 325.

1. THE *New Jersey* Health Report is, as we might anticipate from its being the production of such an eminent sanitarian as Dr. Ezra M. Hunt, replete with useful facts and valuable suggestions worthy of the high place which public hygiene has attained in modern civilization.

As remarked by Dr. Hunt:—

"The care of the public health is no longer regarded as merely a professional concern, or one of generous patronage. The welfare of the State and its highest material interests depend very much upon how far it promotes the health and life of the citizen. It is *political economy* that requires the closest attention to the subject. It has been said that the progress of a people can be tested by the exactness of the attention given to the prevention of preventable diseases. It would seem as if the test were a safe one, for the greatest progress in statistical inquiry, and in the provision of State oversight, has been made by those who in other respects are admitted to be the most prosperous."

It is gratifying to learn from the Report that the judicious improvements in drainage on a large scale at Bound Brook, where it may be remembered that a widespread epidemic of malarial fever, in 1880, attracted public attention, have almost entirely obviated this source of disease; and that any recurrence of the typhoid fever epidemic at Princeton, so disgraceful, so *shameful*, to an institution claiming its high rank as an educational centre, is probably provided against by an improved system of water supply and sewerage.

Encouraging progress is stated to have been made in the important work of inspecting the condition of the hotels at the many sea-side resorts on the New Jersey coast, particularly in regard to the disposal of sewage and the provision of means for escape in case of fire.

An effort of the very mildest kind has been inaugurated to regulate medical practice in the State by requiring practitioners to register and exhibit their diplomas, so that, without indorsing all these as competent physicians, the law demands that, in so serious and important a business as the special care of human life, the person who offers his services as a physician or surgeon must at least have the testimony of some incorporated school or licensing body that the necessary preliminary studies have been pursued. Reasonable complaint is expressed that the inspection of milk and the examination of foods, etc., suspected of being adulterated, are incomplete for want of a sufficient appropriation from the Legislature.

The first paper, entitled *The Relation of the State Board of Health to our Public School System*, by Laban Dennis, M.D., of Newark, is an earnest plea in favour of systematic instruction in anatomy, physiology, hygiene, and general sanitary science in all grades of schools and educational institutions. In arguing against the supposed impracticability of this project, however, the author does not seem to be aware that, on the continent of Europe, as, for example, in the city of Brussels, Dr. Janssens has had in operation an even more complete plan for the sanitary care and instruction of pupils in the public schools, with eminently satisfactory results.

This essay is followed by interesting articles on *Typhus Fever at Camden County Almshouse*, by the Secretary; *Facts as to the Abatement of the Bound Brook Malaria*, by C. M. Field, M.D.; and *Citations from the Law Relating to Nuisances*, by E. S. Atwater, Esq.

The separate reports of the members of the Council of Analysts, which come next in order, give evidence of a great amount of labour on suspected foods, drugs, etc., performed, too, largely as a matter of charity to the State, the compensation being totally inadequate. Among the more important results we note that tea and coffee were found generally pure, candies and spices were as generally adulterated, while sago and tapioca were entirely fictitious, being largely made up of corn starch (for which the careless blunder of "Tea mais starch" in the report is doubtless intended).

The Secretary further contributes instructive papers on *Animals as Related to Human Disease, and the Care of the Public Health*, and on *A Study of Consumption as a Preventable Disease*, which, with reports on vital statistics, circulars and laws, climatology, and a ca logue of the valuable library belonging to the board, make up the remainder of the volume.

2. In the *Maryland* Report the detailed account of the work of the Board by the industrious Secretary, Dr. C. W. Chancellor, opens with a just and earnest tribute to the memory of Dr. Edward L. Howard, whose ability as a sanitarian renders his death a serious loss to the cause of sanitary science in this country. Considerable difficulty seems to have been found in establishing local health boards under the auspices of the State organization, but, thanks to the tireless efforts of the Secretary in arousing public attention by personal visits, hygienic lectures, etc., a majority of the counties in Maryland are now furnished with this important

means for the preservation of health. Dr. Chancellor's report also contains much excellent advice in regard to disinfection, value of vaccination, protection against typhoid fever, scarlatina, diphtheria, and on kindred topics.

Following the tables of vital statistics, and statements of some of the local health boards, appear sundry papers contributed by eminent medical gentlemen of Maryland. The first of these, by Prof. S. C. Chew, M.D., of the University of Maryland, on the *Avoidable Causes of Bright's Disease*, contains a strong plea against the abuse of alcohol, as one of the most common and dangerous foes to the integrity of the renal organs. A second essay on *Water, and the Water Supply of Cumberland, Md.*, by Dr. D. P. Welfley, comprises the results of numerous samples of spring, well, cistern, and river waters, many of which were found to be suspicious or unfit for use. The third paper, on *Physical Education*, is furnished by Dr. Joseph T. Smith of Baltimore, and enunciates the same old but ever needed warnings against the neglect of due *bodily* for excessive *mental* exercise.

An appendix, giving much judicious and timely popular information on sundry hygienic subjects, has been compiled by Dr. Chancellor from the Reports of the Massachusetts and Michigan Health Boards, and other original sources of sanitary knowledge; and the volume closes with an interesting account, also by the Secretary, of the Epidemic of Diphtheria in Frederick City, and of Smallpox in Charles Co., Md.

3. More than one-third of the *Louisiana* Health Report is taken up with the further presentation of Dr. Jos. Jones's side in his unfortunate quarrel with the National Board of Health. In it we find expressed in eloquent and forcible language the same bitter complaints of personal liberty invaded, individual judgment disputed, and constitutional rights assailed, which Prof. Jones has, we doubt not, often cut short, as they were poured out by unhappy patients and their luckless comrades, whom he has imprisoned in smallpox hospitals, or shut up in yellow fever quarantines sorely against their will.

The really sanitary portion of the report, commencing on p. 120, considers first the admirable effort made by Prof. Jones, as President of the Board of Health, to restrict the *sale of poisons and the adulteration of food* in New Orleans. Poisoning by cyanide of potassium is illustrated by some interesting cases and an extended series of experiments upon animals, as is also the subject of poisoning by carbonic oxide and other gaseous impurities of the air. In his investigation of the different kinds of sugar and molasses in the New Orleans market, Dr. Jones concludes that the Louisiana is superior in every respect to the Cuba or the northern molasses; and that from an economic point of view five pounds of glucose should only cost as much as two pounds of sucrose or cane sugar. Dr. Jones also points out the dangers from adulterated milk and infected meat, judiciously urging the systematic inspection of these two important articles of diet, which does not appear to have been as yet practised in New Orleans.

Section fourth of the report is devoted to the *preventable causes of diseases* and deaths arising from the infectious and contagious diseases. Under this head Dr. Jones treats at some length of yellow fever, in regard to which his extended experience of twenty-seven years renders his opinion of especial value. He declares that the older statements that yellow fever

never extended above a height of 2500 feet are shown to be incorrect; that, however violent the disease may be at any place, "it is arrested from the day on which the earth is frozen, and such localities may then be visited with impunity by strangers," that it is contagious, and as a general rule occurs but once during life. In regard to the prophylactic treatment, our author declares that "experience has established the possibility of excluding yellow fever from localities in which it has prevailed as an epidemic, subsequent to its introduction from other regions, by means of an absolutely strict quarantine. But hitherto it has been almost impossible to arrive at any definite conclusions as to the value of quarantine in those regions in which the disease is endemic and indigenous." As to the value of disinfectants, he thinks it very doubtful whether much of the benefit claimed for them is not due to other causes, and in regard to quinine he maintains that it is of use rather as an antidote to the effects of the poison, than of the poison itself. Though no efforts have been made in New Orleans to control the spread of venereal disease, Dr. Jones urges the question upon the attention of the Governor and Legislature, correctly maintaining that much good will be accomplished by the institution of a proper system of medical inspection, treatment, and police regulation of prostitutes.

Voluminous tables, etc., giving the meteorological, vital, and mortuary statistics of New Orleans, and pointing out the progress of sanitary reform, occupy Section V. of the Report; Section VI. is made up of the reports of sanitary inspectors, quarantine officers, and other officials; and the last ninety pages of the volume contain the detailed proceedings of the Board, which give evidence of a vast amount of useful sanitary work, chiefly, if not wholly, performed by its indefatigable and industrious President, Prof. Jones.

4. Nearly five-sixths of the *Illinois* Report is made up of the official register of physicians and midwives, to whom certificates have been issued by the State Board of Health. This list of 5596 practitioners, who minister to the bodily ills of the 3,078,636 inhabitants of the State, may not be quite so instructive to sanitarians generally as health reports usually are, and yet it represents an extraordinary amount of careful and fruitful toil on the part of the officials, which must be more prolific to the people of the State, in the preservation of life and health than many far more pretentious essays.

The volume opens with the report of the able Secretary, Dr. John H. Rauch, comprising the abstract of proceedings, and special statements in regard to canal and river improvements, on the Medical Practice Act, and on general sanitation. From these we learn that nine of the certificates formerly granted had been revoked during the year for cause, chiefly unprofessional conduct, in some cases of a very flagrant character. Some of the medical colleges accused of selling diplomas without study, or after insufficient study, had been further investigated. Six of these institutions had raised their standard, and improved their course of instruction; but thirteen had been definitely rejected as not in "good standing," and their diplomas refused.

A most important document is the report of a committee appointed to recommend a standard which shall be required of colleges to entitle their diplomas to be accepted by the Illinois Board of Health. In order to fulfil their duty this committee addressed a circular of inquiries to the

medical colleges of the United States, and to numerous eminent medical medical gentlemen, which elicited eighty-seven replies. Upon the basis of these the committee advise that a medical college, to be considered in "good standing," must require a preliminary examination or its equivalent; must include in its courses of instruction (besides the usual seven branches), "8. Hygiene and sanitation; 9. Medical jurisprudence;" must demand attendance on at least eighty per cent. of the lectures, in two full courses of five months each, not within the same year; and must compel each student to study three full years, dissect during two courses, and attend two terms of clinical and hospital instruction. This report was unanimously adopted, so that after the medical college session of 1882–83 it becomes the rule of the Board, and will, we hope and believe, do more to protect the people of Illinois from ignorant and knavish quacks, in the guise of true physicians, than any measure which has hitherto been instituted by sanitary authorities in this country. An instructive table, opposite p. 46, showing the courses of study, etc. of colleges whose diplomas are recognized, informs us that of the 45 regular medical schools there mentioned 18 require an examination to be passed in "Hygiene and Sanitation," as a necessary condition for graduation. J. G. R.

ART. XXXIV.—*Supplement to the Descriptive Catalogue of the Pathological Museum of the Pennsylvania Hospital.* By MORRIS LONGSTRETH, M.D., one of the Attending Physicians and Pathologist and Curator to the Pennsylvania Hospital, etc. pp. 219. Philadelphia: Collins, Printer, 1882.

WITHOUT a good descriptive catalogue a museum is of very little use; with one, it at once becomes an important means of study and instruction, more so, indeed, than is usually recognized. Any one who has attended a museum class at one of the London medical schools can appreciate the amount of practical information in medicine and surgery which can in this way be imparted. But in the absence of a systematic method, any intelligent student, with a good catalogue in his hand, can devote profitable hours to study of this sort. Unfortunately, there are catalogues and catalogues; some are little more than transcripts of the labels on the jars; others are concerned almost exclusively with the descriptions of the specimens; whereas the typical catalogue gives a *résumé* of the history, as well as a detailed account of the preparation. To this last division belongs the one of the Museum of the Pennsylvania Hospital, prepared by Dr. Longstreth, which forms a supplement to the Descriptive Catalogue prepared by Dr. Pepper in 1869, and contains an account of the specimens added since that date. We once heard a master in the profession say that he judged a hospital by the way in which the post-mortem work was done; and there is much truth in the remark, for careful clinical men know full well that the key to many of the problems at which they work is to be found in the dead-house. This catalogue may be regarded as describing the more interesting specimens obtained from the hospital during the past ten years, and it shows at once the intimate relationship which exists between clinical and pathological work in this institution. A striking feature of it is the prominence given to clinical details; in almost every

instance, after a statement of the condition of the specimen, and an explanation of what it shows, the history of the case is given in brief. We do not remember to have seen any catalogue in which this excellent practice has been carried out to the same extent. We congratulate Dr. Longstreth and the hospital on the way in which this work has been performed. We had occasion lately to go through some ten pathological museums of the different schools and hospitals in this country, and were in a position, on arriving at the Pennsylvania Hospital, to appreciate fully the advantage of a good catalogue. W. O.

ART. XXXV.—*Causes of Deafness among School Children, and its Influences on Education, with Remarks on the Instruction of Pupils with Impaired Hearing, and on Aural Hygiene in the Schools.* By SAMUEL SEXTON, M.D., Aural Surgeon to the New York Eye and Ear Infirmary, Member of the American Otological Society, etc.
Circular of Information of the Bureau of Education, No. 5, 1881. Washington: Government Printing Office, 1881.

HON. JOHN EATON, Commissioner, says, in a letter dated Washington, Sept. 24, 1881, and addressed to the Hon. Secretary of the Interior, "The causes of deafness among school children are numerous and important enough to justify a special investigation of the subject," and he therefore requested Dr. Sexton to prepare a paper on this subject. Dr. Sexton has accordingly presented in this valuable brochure the more practical conclusions regarding the causes of deafness among school children, together with suggestions of a hygienic and prophylactic nature drawn from his own observations among a large number of pupils in dispensary, hospital, and private practice.

He also gives a brief description of the structure of the ear, together with its physical and physiological functions, wood-cuts of its deeper and invisible parts, and a most excellent description of the sympathetic relations between the teeth and the ears, because *diseased states of the former have so great an influence on the acoustic organs, especially of the young.*

Pages 11 to 16 inclusive alone would make this brochure so valuable to the general practitioner as to justify him in going to the trouble of sending to Washington for a copy, for in these pages the causes of many cases of deafness are set forth most plainly, and the *modus operandi* of cold in the head explained in the only scientific way.

Not only are the causes of cold in the head and consequent deafness explained most lucidly, but a preventive hygiene is marked out, so that teachers as well as parents will do wisely in reading it and carrying it out. Then there follows a graphic account of the unfortunate results of incapacitating deafness, and their ramifying evils throughout the various avocations. Thus the partially deaf child is slighted in his education, and falls short of the attainments otherwise possible to him. But what is still more important is that teachers who are partially deaf are now and then found only imperfectly fulfilling their duties. "Should an instructor himself be defective in his hearing sense, and yet unaware of the fact, it would be easy for him to unjustly censure children for incompetency in

the course of instruction, or in examinations for promotion, simply because their responses were not heard." He, therefore, suggests that "persons desirous of acquiring a pedagogical education at the public expense should be subjected to an aural examination before they are accepted, and in the appointment of teachers in the public schools the ability to hear well should be a requisite." (p. 25.)

When alluding to aural hygiene in the schools, Dr. Sexton says, "When we are appealed to as humanitarians to provide hospital accommodations for the poorer class, no means are spared in the planning and erection of healthful buildings for their use, but when school-houses are to be constructed—when both body and mind should be aided in development, prepared, I may say, to enter the struggle for 'the survival of the fittest' —their erection is, I fear, too often intrusted to the political contractor, whose knowledge in building is chiefly confined to 'making it pay.'"

The author then discusses the mistake of paying all attention to heating a school-room, and *none* to ventilation, the insufficient clothing of some school-children, and the excessive clothing of others, and the evils arising from out-door bathing. He further calls attention to the evils of mouth-breathing, directs us what to do when foreign bodies get into the ear, deprecates boxing the ears, and alludes to the misfortune of having a school-room so near a street as to be disturbed by its noises. The physical well-being of a child is often interfered with by the foulness of a discharging ear, and his mental condition greatly depressed by the knowledge that the offensive smell of his ear renders him an object to be avoided, not only by his fellow-pupils, but even by his teachers. From a purely cosmetic treatment, therefore, in such cases excellent moral results would accrue to patient, fellow-pupils, and teachers. We most heartily recommend this pamphlet to the careful attention of the profession. C. H. B.

Art. XXXVI.—*A Case of Ectropion Successfully treated by Transplantation of Skin from the Arm and Forearm.* By Louis H. Fosswill, M.B. 12mo. pp. 10. London: J. & A. Churchill, 1882.

This pamphlet is a fuller account of a case already reported at the British Medical Association, but is worthy of notice from the character of the operation, and the success which followed it.

A boy, aged 10, had been so severely burned some years before as to have complete eversion of both left eyelids and the lower lip. The left cornea was inflamed and opaque, and the right opaque and staphylomatous, with some eversion of the lower lid. The left eye remained staring wide open during sleep. No healthy skin was available for a flap. Accordingly, after dissecting loose the two left eyelids, Mr. Fosswill pared their edges and united the lids by sutures. He then cut from the right arm and forearm, with a sharp knife, two semicircular pieces of skin, one $2\frac{1}{4} \times 1\frac{1}{2}$ inches, the other two-thirds as large, and placed them on the upper and lower raw surfaces. Each piece was freed from all areolar tissue and fat, and secured in place by fine silk sutures. Gold-beaters' skin, cotton-wool, and a bandage completed the dressing. On removal of the gold-beaters' skin on the sixth day the union was so firm that some stitches were removed,

and the remainder two days later. On the twelfth day the lids, which had united firmly, were separated, and the cornea was found greatly improved. Dressings were continued for five weeks. The upper ectropion was completely cured, the lower nearly so.

Mr. Fosswill recommends that the large skin graft be cut with a knife instead of scissors; that it be 50 or 60 per cent. in excess of the surface to be covered, so as to allow for shrinkage; that all areolar and fat be dissected off, even at the risk of loss of heat by the flap; that the sutures be numerous and fine, and that the dressings be but little interfered with, and continued for some weeks, with a view to warmth if nothing else. The gold-beaters' skin is of the greatest use in preventing the displacement of the flap, an irreparable disaster.

This extension of the experience of Reverdin and Ollier with the skin and periosteum promises to be very useful in the future. Our own essays with it have not been so successful, but we have learned much from our author's experience.

It is to be regretted that no illustrations accompany this interesting and instructive case. W. W. K.

ART. XXXVII.—*Human Osteology, comprising a Description of the Bones, with Delineations of the Attachment of the Muscles, the General and Microscopic Structure of Bone and its Development.* By LUTHER HOLDEN, assisted by JAMES SHUTER. 8vo. pp. xii., 309. Pl. lxi, and wood-cuts lxxxix. Sixth edition. Philadelphia: Presley Blakiston, 1882.

THE appearance of a sixth edition of this well-known and excellent monograph is a healthy sign. We welcome it anew, and with the greatest pleasure both for its own and its author's sake. We heartily wish that more of our anatomical plates were not only as good, but as creditable to the author's skill as draughtsman, as these by Mr. Holden. It is a pleasure to see on each recurring lithographic plate, "From Nature by L. Holden." Besides a few minor improvements in this edition a few brief notes on Comparative Osteology have been added which, though not new or extensive, add immensely to the value of the book. This is especially so to any London student, for all these references are accompanied by the number of the illustrative specimen in the splendid museum of the Royal College of Surgeons. Mr. Flower has lately rearranged the museum specimens with precisely the same object in view. Each bone of the human body has grouped with it typical specimens of the corresponding bone from as many of the lower animals as are accessible. In this manner the entire skeleton can be studied with the greatest possible help from Comparative Anatomy. Mr. Holden has made his book a companion volume to the museum.

Why could not the same be done in this country by the Mütter Museum in Philadelphia, the Museum of Comparative Anatomy in Cambridge, and others? W. W. K.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

Anomalies in the Arterial System.

Dr. J. G. WILTSHIRE reports the case of a negro in whom dissection showed some curious anomalies. The heart was found on the right side, with its base at the proper level, corresponding with the upper borders of the third costal cartilages, with its apex pointing to the right, resting on the diaphragm at a point corresponding with the space between the fifth and sixth ribs. It was normal in size and appearance.

From the left side of the heart the arch of the aorta came off and in every way behaved as it ought to have done, save in giving off its branches. The arteria innominata was wanting, its branches coming off from the arch in the following order:—

The right common carotid arose from the upper face of the transverse part of the arch, where it begins to descend toward the third dorsal vertebra, and then it ascended, in front of the trachea, to the right side of the neck to its usual point of bifurcation into the external and internal carotids; the former gave off no branches until it reached a point opposite the symphysis of the chin, where a short axis was thrown off, from which the facial, lingual, and superior thyroid arteries arose. The latter (internal carotid) presented nothing that was at all irregular in its behaviour.

The left common carotid artery was derived from the outer face of the descending part of the arch, and ascended, upon its old bed, to its usual point of bifurcation, acting as did its fellow on the opposite side.

The left subclavian arose from the descending part of the arch of the aorta, at a point where it crosses, and passed upward and outward to its usual line of passage to the anterior border of the first rib (Wilson).

No more anomalies occurred in the arterial tree until it passed into the abdomen, where the cœliac axis came off from the posterior face of the aorta and passed to the right of the latter to its front, where the hepatic, gastric, and splenic arteries were given off. There were two renal arteries on the right side, whereas there was only one on the left.—*Maryland Medical Journal*, Nov. 15, 1881.

Relation of the Peripheral Vaso-Motor Centres to Temperature.

LEWASCHEFF (Pflüger's *Archiv*, vol. xxvi. p. 60) subjects to renewed experimental inquiry the contradictory statements regarding the action of heat and cold on the vessels. According to most observers, the primary effect of cold is constriction, that of warmth dilatation. According to the later observations of Dziedzjul, the reverse is the case, namely, constriction in a medium above 15° Cent. (59° Fahr.), dilatation below 15°. The author experimented upon amputated limbs of dogs, in which an artificial circulation of defibrinated blood was maintained. Nerves and muscles then remained excitable at the end of eight to ten hours, during which period spontaneous contractions were occasionally observed; he judged of the calibre of the vessels by pressure, by rapidity of outflow, and by temperature. He comes to the conclusion that increase of temperature causes dilatation, and diminution of temperature constriction; and that the greater the increase, the greater the dilatation, and the greater the diminution the greater the constriction. These results did not occur with dead limbs, and the changes were, therefore, due to vital activity of the arterial walls. In order to determine the share in the changes of vaso-motor fibres and centres, the author experimented on limbs of which the nerves had been cut a month previously to insure their complete degeneration; the changes were as before. Seeing that Samkovy and Gruenhagen (*Archiv*, 1874, p. 399; and 1879, p. 165) have shown that smooth muscle relaxes with diminution of temperature, and contracts with increase of temperature, the author attributes the above changes to peripheral centres, and not to direct action on the arterial muscle.—*London Med. Record*, April 15, 1882.

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Influence of the Nervous System on the Lymphatics.

MM. PAUL BERT and LAFFONT, in a note communicated to the Académie des Sciences, point out that the lymphatic vessels behave, in the presence of physical excitants, exactly as do the bloodvessels. All are agreed in referring the dilatation and contraction of the latter to the influence of the nervous system, but no one has hitherto endeavoured to ascertain whether the lymphatic vessels are under the same influence. The authors have, therefore, made experiments in order to ascertain whether this is the case. The abdomen of an animal during the process of digestion was opened under tepid water, so as to avoid the influence of the air and cold on the abdominal lymphatics. The mesenteric nerves were then stimulated electrically, and on this the lymphatic vessels were observed gradually to shrink and disappear. In another animal the splanchnic nerves were similarly stimulated by a voltaic current so feeble that when applied to the tongue it could scarcely be perceived, and the same vessels were then seen to swell and to become turgescent. If the pneumogastric nerves were divided and the peripheral extremities stimulated, besides the peristaltic movement of the first part of the intestine, there was observed first a transient dilatation, and then a considerable and permanent dilatation of the lymphatic vessels. It seemed important to ascertain whether the same effects could be produced in curarized animals. Claude Bernard showed that the pulsation of the lymphatic hearts of the frog ceases under the influence of curara at the same time as the function of the motor nerves of the muscles is suspended. Experiment shows that the same effect is not produced on the lymphatic vessels. Under normal conditions, when the mesenteric nerves are stimulated the lymphatic vessels contract; but under the influence of curara, stimulation of the mesenteric nerves, or of the splanchnic nerves, causes dilatation of these vessels. It is, however, necessary to ask whether the change in the size of the lymphatic vessels may not be a secondary effect of

the action of the nerves stimulated, upon the blood-pressure in the intestinal vessels. To this an answer is supplied by further experiments, which show that the changes in the lymphatics are entirely independent of the condition of the bloodvessels. The section of the mesenteric nerves which causes turgescence of the bloodvessels does not interfere with the normal course of the chyle, and causes no modification in the size of the chyliferous vessels. Nor has ligature of the arteries any influence on the size of the related lymphatic vessels. Some experiments have also been made on larger animals, the ass and the horse. In these, under the influence of electrical stimulation of the peripheral extremity of the trigeminus, the lymphatic vessels of the upper lip were observed to become varicose, and to form a pale prominence beneath the mucous membrane. The investigators have also succeeded in reproducing, in the chyliferous lymphatics and thoracic duct of the dog, the experiments of Gubler on the veins of the hand. A slight tap on the vessel caused a narrowing which passed gradually onwards and was succeeded by dilatation.—*Lancet*, April 29, 1882.

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Pancreatic Digestion.

The functions of the pancreatic secretion in the process of digestion have been considerably but by no means exhaustively studied. A fresh series of experiments on the subject has been made by M. Duclaux, and described in a paper which he has communicated to the Académie des Sciences. The facts he mentions deserve notice, although they are not altogether novel. A small fragment of the pancreas will liquefy starch, leaving intact only the outer capsule of the starch grain, which is also unaffected by the diastase of germinating barley. This external capsule, if isolated, is not coloured blue by iodine unless treated also with sulphuric acid. It is variable in thickness in different kinds of starch, and seems thus to consist of true cellulose. Except this residue all the starch is dissolved. Duclaux thinks the action is too rapid to be attributed to a ferment. He points out also that the action of the pancreas on albuminoid material is not at present very clearly understood. If one or two milligrammes of pancreas are introduced into ten cubic centimetres of milk, the liquid, at the end of a few hours, is no longer coagulated by acids, even nitric, nor by acidulated ferrocyanide of potassium, and it is, moreover, clear. The pancreas thus plays an important part in the digestion of milk, which may be one of the reasons why milk diet is so useful in diseases of the stomach. In cooked meat, under the same conditions, the muscular fibres are broken up, especially towards the extremities, where they are not protected by the sarcolemma. The interfibrillary substance becomes dissolved, and so the fibrillæ become separated. The difference in action of the gastric juice and pancreatic secretion may be roughly summarized by stating that the former breaks up the fibre transversely and the latter longitudinally. But the effect is not limited to this longitudinal dissociation. The cooked meat is gradually transformed into alimentary pulp, which closely resembles that produced by the gastric juice, but there is never complete solution, although the tissue elements which resist are too small to permit their actual nature to be determined. It is clear, however, that the pancreatic juice has no power than that of the stomach to digest indifferently the various albuminoid bodies. Another fact points to the same conclusion. The fragments of the pancreas themselves remain unchanged even after a very prolonged sojourn in the stove. Contrary to what is sometimes asserted, the pancreas cannot digest itself. When this takes place, it is only through the agency of the organisms of putrefaction. This presents a fresh instance of the law that every living cell consists of elements which are impregnable in its vital conditions to the ferments which it may secrete.—*Ibid.*, April 29, 1882.

The Changes in the Composition of Saliva in Different Diseases.

Dr. SAMUEL FENWICK read a paper at the meeting of the Royal Medical and Chirurgical Society on March 28th, on the presence of bile in the saliva, and on the variations in the amount of sulphocyanide of potassium in the saliva of persons affected with different diseases. The author commenced by stating that it is generally believed that in cases of jaundice the saliva does not contain any of the colouring matter of the bile. He has, however, found a yellow colouring matter in the saliva of every case he has examined, after evaporating it by means of a gentle heat. A bitter taste is often complained of by patients affected with jaundice, and it has been suggested that it might result from the presence of the biliary acids in the saliva. The author has not been able to prove whether this opinion is correct or not, but he details a case in which an intense bitterness was complained of by a person unaffected with jaundice, in whose saliva he found traces of the biliary salts by the ordinary tests. Having proved that both the colouring matter and the salts of the bile occasionally presented themselves in the saliva, an attempt was made to ascertain whether the amount of the sulphocyanide of potassium usually present in the saliva varies in different diseases, and whether such variations coexist with any particular diseases. For this purpose, the saliva was examined in a large number of patients treated in private and hospital practice, and the results were afterwards analyzed. As it had been stated by some physiologists that the sulphocyanide was only the result of decomposition, set up in the saliva by decayed teeth, and by others that it was produced by tobacco-smoking, these two conjectures were first examined. The state of the teeth was carefully remarked in eighty-seven hospital patients, and it was found that there was no relation between the amount of decay in them and the quantity of the sulphocyanide in their saliva. The habits of 213 persons were inquired into respecting their use of tobacco, and it was found that the amount of the sulphocyanide was not affected by the habit of smoking. The quantity of sulphocyanide was almost always deficient in cases of jaundice arising from obstruction; thus, of twenty-three cases, it was very deficient in eighteen, and in some scarcely a trace could be found. From this the author conjectures that the amount of this salt in the saliva depends on the quantity of the bile that reaches the intestines; a conclusion that seemed to be supported by two cases of hepatic fistula, in both of which it was also very deficient. Where jaundice was absent, one of the chief circumstances that appeared to regulate the amount of the sulphocyanide was the quantity of food taken by the patient; thus, it was always deficient in œsophageal stricture, and in cancer of the stomach. Persistent vomiting, diarrhœa, and dysentery produced a similar result, probably by removing the food before it could be fully digested. It was also deficient in cases of severe atonic dyspepsia, and in all cases of chronic disease where the appetite was very bad. The sulphocyanide was found to be in excess in fat persons and in those who were gaining flesh; deficient in those who were thin or rapidly losing weight. It was greatly in excess in all cases of acute rheumatism (thirty-six cases examined), and reached the maximum in the second week of the disease. It was also in excess in all the cases of acute gout, and in most persons liable to what are termed "bilious headaches." In the early stages of all inflammatory disorders there was an excess, for instance, in gastric catarrh, in acute pleurisy, erysipelas, diseased kidneys, and in phthisis, but it sank below the average in the later stages of these diseases. The author points out that the fibrine of the blood has been found to be in excess in most of the above diseases, such as acute rheumatism, gout, erysipelas, and acute inflammations, and he suggests that an unusual amount of sulphocyanide in the saliva is perhaps the consequence of an excessive excretion of unoxidized

sulphur, resulting from the large amount of albuminous material of the blood that has been altered by the inflammatory process, and thereby rendered unfit for organization into healthy tissue.—*Med. Times and Gaz.*, April 15, 1882.

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Renal Secretion.

SENATOR (*Verhandl. der Physiol. Gesellsch. zu Berlin*, Jahrg. 1881–2, No. 6) has recently reviewed the various theories which have been put forward during the last few years with respect to the share taken by the various parts of the apparatus in the kidney for separating the different elements of the urinary secretion. His conclusion affirms those views which have found general acceptance in this country. He believes that the blood-pressure determines the rate of secretion from both the Malpighian tufts and the epithelium of the tubules. He regards the process in the Malpighian body as one of simple filtration, and rejects the view that the epithelium covering the tufts acts as a secreting parenchyma. He thinks we must admit that some water is secreted, together with the salts, by the epithelium of the convoluted tubules. A certain amount of albumen may be present accidentally as a transudate through the walls of the Malpighian tuft. He thinks the following factors determine its presence: the conditions, especially the thickness of the membrane, the concentration of the solution (*i. e.*, the blood), its saline contents, its temperature, and the filtration-pressure. The urine, according to Senator, is a mixed solution, the result of, in part, transudation from the bloodvessels, in part of secretion by the glandular epithelium of the kidney.—*London Med. Record*, April 15, 1882.

MATERIA MEDICA AND THERAPEUTICS.

Administration of Belladonna to Children.

Dr. JULES SIMON, in a lecture delivered at the Hôpital des Enfants-Malades (*Gaz. des Hôp.*, January 5 and 10), observes that belladonna is a medicine that is often employed with success in children, who in general bear it very well, just as adults for the most part tolerate it badly. The doses which he recommends are the result of the almost daily use of the drug, either in his hospital or private practice. As examples of its efficacy, he alludes to its use in four cases, one of them occurring as far back as 1871, so that the employment of belladonna is no new thing with him. This case occurred in a boy three years and a half old, the subject of intense whooping-cough, to whom he gave, on March 7, thirty drops of the tincture of belladonna to be taken in the twenty-four hours. On the 8th he ordered forty drops, and next day sixty, always in the same space of time. This last dose was continued daily until the 19th, not only without any accident, but with great improvement in the cough. In two other cases, in boys four and three years old respectively, the dose given varied from fifty to sixty drops in the twenty-four hours; and in a girl thirteen years of age, with bad paroxysms of the cough, beginning with ten drops per diem, he gradually increased the dose to 120, without the slightest accident arising.

The powder and extract of belladonna are two preparations that may be very well associated so as to make very small pills, each containing a centigramme of extract and one of powder; and these pills are found very useful in combating the tendency to constipation in chlorosis. The dose of the tincture may be

graduated as follows: From two to three years of age, five to ten drops; three years, ten to twenty drops; and above three years, thirty to forty drops per diem, always, however, at this last age commencing with ten drops. The dose should in all cases be divided into two portions. Below the age of two the tincture is given only quite exceptionally, and then at a year old in doses of five drops per diem. Of the syrup the daily dose is one or two teaspoonfuls (*i. e.*, five to ten grammes) for a child two years old, and two, three, or even four teaspoonfuls for one of three years. To the adult are generally given two tablespoonfuls, or about thirty grammes. When the neutral sulphate of atropia is employed, half a milligramme per diem should be given to a child two years old, gradually increasing the daily dose to two milligrammes. Belladonna may also be employed externally, as in arthritis and coxalgia, when a liniment may be formed of four parts of extract of belladonna and six of extract of henbane with q. s. of oil of henbane. Sometimes also the extract of belladonna is added to mercurial ointment; and an ointment composed of neutral sulphate of atropia twenty to thirty centigrammes and benzoinated lard thirty grammes is very useful in relieving or even removing muscular pains in certain cases. "Belladonna is, then, a very active and in general well-tolerated remedy; and of all the preparations we have referred to, the tincture in medium doses of ten drops for a child two or three years old is the most employed, as also the syrup in doses of one or two teaspoonfuls for a child of the same age. I much prefer these two preparations to the neutral sulphate of atropia."

Turning to its physiological properties and therapeutical indications, belladonna may be described as an irritant substance to the parts upon which it is deposited. Taken internally, it induces thirst, dryness of the throat, with bitterness, and a certain acridity. Sometimes it gives rise to a semi-paralysis of the pharynx, and sometimes even to a kind of dysphagia. In poisonous doses it gives rise to nausea and vomiting, like opium itself. But while the action of this last on the intestinal canal is characterized by constipation, belladonna, on the contrary, produces hypersecretion from the mucous membrane of the canal, and slight painless contractions—that is, diarrhœa. Belladonna has a sedative action on the circulation, producing in a therapeutical dose a diminution of the pulse and calorification; while in a poisonous dose it gives rise to febrile accidents and a notable elevation of temperature. Preparations of belladonna produce on the skin almost a scarlatiniform eruption of uniform redness. Their action on the respiration is to diminish the secretion of the respiratory mucous membrane, the rapidity of respiration, and the play of the thorax, diminishing also the sensibility of the nerves. But when given in large doses, at the same time that these induce vomiting and fever they increase the movements of the thorax. Transpiration is not increased by belladonna, which again in this differs from opium; and it is the same with the urine, which is increased in quantity. It is a nervine *par excellence*, exciting the central nervous system. In a somewhat larger dose it produces cephalalgia; in a stronger dose, vertigo, intoxication, subdelirium, with great loquacity; and in a poisonous dose the delirium becomes more intense, and even furious. Opium is the opposite of this, depressing the nervous system. It acts on the pupil by "decongestioning" and dilating it; again the opposite of opium. On this ground it is supposed to render the brain anæmic, while opium seems rather to produce its congestion. Finally, in a therapeutical dose it diminishes the susceptibility of the nerves of sensibility, and in a poisonous dose it gives rise to the phenomena of tetanism. To sum up: the principal action of belladonna is to produce diarrhœa, to diminish calorification, to increase the renal secretion, to maintain the nervous system aroused, while rendering the central nervous system anæmic.

As to the diseases in which belladonna is indicated, Dr. Simon states that in

simple acute laryngitis, in stridulous laryngitis, in intense laryngitis with spasms, raucous cough, etc., he prescribes a mixture of equal parts of the tincture of the roots of aconite and belladonna, giving ten drops per diem to children two or three years of age. In spasmodic and paroxysmal bronchitis, in bronchial adenopathy, in whooping-cough, and in influenza, he also orders belladonna in combination with aconite. If the child is nervous and very excitable, he also associates with the syrup of belladonna (ten grammes) syrup of codein (ten grammes) and eight or ten drops of tincture of aconite, obtaining thus the benefit of both opium and belladonna, their antagonism not being so complete as to prevent their advantageous association in some forms of disease, especially such as are attended with respiratory spasm. Belladonna is also of service in emphysema, in asthma, and in suffocative paroxysms. On the other hand, its employment is absolutely proscribed in pneumonia and broncho-pneumonia. In affections of the digestive organs, especially those met with in nervous little girls, already almost hysterical, with their intellect developed beyond their age, and who are already little actresses, who have anæsthesia of the skin, complain of severe pains without obvious cause, and who suffer from gastralgia, dyspepsia, and sometimes vomiting; in such patients, after trying laudanum, blisters, douches, and ice, he gives belladonna, in spite of the cerebral irritation which exists, in doses of a teaspoonful of equal parts of syrup of belladonna and syrup of codein. When children are growing up and suffer from constipation, which accompanies abdominal neuralgia, he gives before meals a pill consisting of a centigramme of powder and one of extract of belladonna. In tenesmus, ointments combined with belladonna generally succeed, and they are also of use in appropriate cases of nocturnal enuresis. In young girls of thirteen to fifteen, in whom the establishment of menstruation is difficult and is accompanied by erratic pains, a liniment composed of four grammes of the extract of belladonna, six of the extract of henbane, and thirty of the oil of henbane may be applied to the hypogastrium, and then covered with a cataplasm. The pains are by this relieved without the ill effects produced by opium enemata on the menstrual process. Belladonna, formerly much employed in epilepsy, has of late been superseded by the bromides; but in some cases in which these last have been found to fail, advantage has been derived from giving for a fortnight one or two milligrammes of powder of the neutral sulphate of atropia, and following this up for another fortnight with strychnia. In zona and in facial neuralgia of rheumatic origin belladonna may be employed for the relief of the severe pains. In affections of the eye it is of use in diminishing the contraction of the pupil, as also in catarrhal or purulent conjunctivitis, especially when followed up by quinine. It is an error to regard it as a preservative from scarlatina.

"Belladonna, then, is a means which may be very usefully employed in the affections of the respiratory organs already indicated, in diseases of the digestive canal (when neither enteritis nor diarrhœa exists), in affections of the nervous system, in zona, in facial neuralgia, and in diseases of the eye."—*Med. Times and Gaz.*, March 11, 1882.

Chloroform Water.

In an article in the *Gazette des Hôp.*, March 25, attention is drawn to a highly useful preparation of chloroform for internal use, made by the simple addition of water, and one which will favour the more extended employment of this useful agent. Profs. LASÈGUE and REGNAULD have shown, after due investigation of the subject, that this is the only preparation to be relied upon; and that the solubility of chloroform in water does not exceed 9 per 1000. This solution is

obtained by pouring an excess of this substance into a bottle three parts full of distilled water, shaking the mixture repeatedly, and then allowing the insoluble chloroform to deposit until complete transparency is obtained. The separation of the saturated solution is then made by decantation, or by means of a siphon. This, however, being too strong for internal use, requires dilution with 9 per 1000 of its weight of water. Various salts (as chlorate of potash, borate, bicarbonate and salicylate of soda) may be dissolved in this water without producing any modification; and Profs. Lasègue and Regnauld are of opinion that chloroform-water, either pure or diluted, will meet every need of the internal administration of this substance. Giving a pleasant taste in the mouth, which lasts for a minute or two, it is well calculated to disguise the unpleasant taste of various medicines, as castor oil, etc.; and by the direct action which it exerts on the mucous membranes and other surfaces with which it comes in contact, it may prove useful in certain affections of the mouth, gums, teeth, velum, pharynx. Swallowed, it exerts a stimulant action on the stomach, but it acts differently according as it is taken before, during, or after a meal, and according to the lapse of time that has intervened between taking the meal and the absorption of the chloroform. Given before a repast, in aid of the appetite, the chloroform-water is a bad agent; but given after a meal, whether alone or combined with an alcoholic wine and sweetened, it increases the stimulant properties of the wine or produces the same effects. Wherein this water enjoys an incontestable efficacy, which is proper to it, is when it is administered for combating the multiple affections which supervene during the course of digestion and produce its disturbance. Its maximum therapeutical action is obtainable three or four hours after the meal, when functional disturbances exhibit themselves by yawning, distension, gaseous eructations, a sense of epigastric pressure or heaviness, flushings of the face, and threatenings of vertigo. But in a higher degree still, when the digestive disturbances are manifested by acute lancinating pains of the stomach, oppression, palpitations of the heart, fleeting febrile action, dryness of the mouth, painful tympanites, etc., the action of the chloroform-water is injurious, this period of the indisposition being ill-suited for any stimulant whatever. In a word, the chloroform-water acts on the stomach in the same calming way as upon the interior of the mouth, and if it do not cure the affection, at least it attenuates its consequences. It is the remedy for the crisis, but not dispensing with the requisite principal treatment. It is a remedy eminently suitable as an efficient calmant of the sufferings which ensue from painful digestion in dilatation of the stomach.—*Med. Times and Gazette*, May 6, 1882.

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Therapeutic Value of Resorcine and Chinoline.

Dr. BRIEGER (*Deutsch. Med. Zeit.*, Feb. 2, 1882) has carried out experiments on resorcine and chinoline in the clinic of Dr. Frerichs, and gives the results in a paper read on January 30, at the meeting of the Verein für innere Medicin. Resorcine was first recognized as a check to decomposition and fermentative processes and as a powerful antiseptic, by Andeer, and it was believed that there was no external disease in which it did not prove effective. Brieger has, however, got no good result from even a 5 per cent. solution in gonorrhœa. Internally, he tested its antifermentative and antipyretic qualities in typhus and pneumonia, and found that doses of 1½ grammes lowered the temperature somewhat; however, the larger number of the patients thus treated fainted easily, complained of tinnitus aurium, and exhibited startling delirium. In a few patients the pulse became small and soft, the heart's impulse less strong; heavy rigors and perspirations followed, and, lastly, collapse, from which they were with difficulty recovered.

If the dose were pushed beyond 3 grammes, symptoms analogous to poisoning by carbolic acid were observed; whilst the lowering of temperature only lasted a short time, to be succeeded, in from one and a half to two hours, by increase of fever and temperature, to even a higher degree than before. The nausea was also very objectionable. It might be suggested that, as small doses lowered the temperature for a time, larger doses could be administrated to lengthen the effect; but against this is the fact that resorcine is excreted as ether and sulphuric acid, and only a part is further oxidized and forms coloured products of oxidation. Hence, as resorcine is administered, the body becomes poor in sulphuric acid, and receives bodies which act as poisons on it. As an antipyretic, therefore, this drug is not to be recommended on any account. It has also been lauded in intermittent fever; but, as in well-constructed hospitals this fever is observed to pass over favourably without medication, Brieger has not administered resorcine to the patients. He has used the other agent chinoline, without the slightest effect in typhus, pneumonia, rheumatism, and remittent fever; it being in some cases vomited, thereby probably reducing the temperature very slightly. It has also bad effects following its administration, *e. g.*, disturbances of digestion, vomiting, and nausea; so that it does not seem advisable to use chinoline in its present form. Hiller has made similar observations, which were extended to phthisis and enteric fever, with like results, using the tartrate of chinoline, which is very insoluble and of a very disagreeable taste, producing vomiting in three-fourths of all the patients to whom it was given; he has therefore abandoned it. Guttmann used resorcine as a wash for the bladder in chronic cystitis in three patients, in whom it caused intense pains and hæmaturia with renal elements, which at once ceased when salicylic acid solution was used. He trusts that such washings-out with resorcine will never be undertaken again. Brieger, lastly, is astonished that Soltmann recommends it for children with stomachic ailments.—*London Medical Record*, April 15, 1882.

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Detection of Small Amounts of Iodoform and Substances Yielding Iodoform.

On heating an alkaline solution of resorcin with even very small amounts of iodoform a red coloration is produced which again disappears on the addition of an acid. This reaction may be readily employed for the detection of small amounts of substances yielding iodoform, as alcohol, acetone, etc. As is known, such substances are recognized by warming the liquid to be examined, adding a solution of iodine in potassium iodide or potassium carbonate, and then sufficient solution of sodium hydrate, drop by drop, until the brownish-yellow colour is nearly discharged. On agitation and standing, the iodoform separates as a bright yellow crystalline precipitate, which, under the microscope, appears in the form of regular six-sided tables of roundly-pointed laminæ. As on the one hand small amounts of iodoform remain dissolved, particularly in alcoholic liquids, and on the other hand the microscopic examination of the precipitate is somewhat circumstantial, it is recommended to gently warm the liquid containing iodoform, obtained by the above method, with the further addition of alkali and a little resorcin. The above-mentioned characteristic red coloration of the liquid then appears.—*Cincinnati Lancet and Clinic*, April 29, 1882, from *Pharm. Centralhalle*.

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The Convulsive Properties of Morphia.

The *Gazette Hebdomadaire* contains an interesting note by MM. Grasset and Amblard on the convulsive properties of morphia. Opium contains, as is well known, two series of alkaloids of very different properties, of which thebain and morphia are types. In certain points of view, however, the physiological re-

sults produced by these alkaloids are not entirely dissimilar; for example, it has been found that morphia, as well as thebain, may possess convulsive properties when given to cold-blooded animals. MM. Grasset and Amblard have found an analogous result in the warm-blooded animals; when one or two centigrammes are injected hypodermically, slight transient convulsions are produced before sleep occurs. When larger doses are given, these transient convulsions are succeeded by a generally calm sleep, during which, half an hour or an hour after the injection, isolated contractions occur, which may pass into a form of clonic convulsion, with marked flexion of the body, occurring at each inspiratory movement. These results seem to indicate that the excito-motor effects produced by preparations of opium may not only be due to the convulsive alkaloids, but also to those which are generally regarded as soporific.—*Revue Scientifique*, March 25, 1882.

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The Effect of Bleeding on Inflammation.

The effect of local abstraction of blood in relieving local inflammation is one of the ancient doctrines of therapeutics which is still unrefuted and still unexplained. It was formerly held that the result was produced by a perfectly simple *modus operandi*. By the removal of blood from the surface the vessels of the deeper inflamed parts were partly emptied; but it was later recognized that this explanation is incompatible with the known conditions of the circulation. The local removal of blood never produces a lasting effect on the circulation in the part. At the present time it is generally assumed that the effect of local depletion is to remove the inflammatory stasis, although such an effect has never been demonstrated experimentally; and, moreover, the idea of a derivatory action still haunts the theory of the subject, while the effect is sometimes ascribed to the influence of the depletion on the whole mass of blood. The question has been lately subjected to experimental investigation by Genzmer and Nikolas of Halle, and the results obtained have been described by the former in the *Centralblatt für d. Med. Wiss.* In the web of the foot of curarized frogs foci of inflammation were excited by punctiform cauterization, either by nitrate of silver or a red-hot needle, and the process was watched with the microscope. When the well-known phenomena of inflammation made their appearance, the aggregation and exit of the white corpuscles, retardation of the blood-current, and, finally, the formation of stasis, a leech was applied to the leg. As soon as the leech began to suck, a striking change occurred in the inflammatory process in the foot. The blood-current became quickened, and carried on the corpuscles which were adherent to the wall. The stasis passed away, and in a few minutes the inflamed capillaries were cleared, and presented to the end of the experiment a normal and even accelerated circulation. Whether the corpuscles which had already wandered out of the vessels were influenced by the abstraction of blood could not be with certainty determined. In some experiments scarification was employed after the focus of inflammation had been excited. The effect was less conspicuous, since the loss of blood did not occur with the same vehemence as with a leech, although the amount of blood abstracted was nearly the same. The effect of abstraction of blood from the general circulation, by opening an abdominal vein, was still slighter, although the amount of blood taken was considerable. The conclusion drawn from these experiments is that the antiphlogistic action of local abstraction of blood is produced by a purely mechanical agency. A temporary augmentation of the circulation occurs, by which the capillaries are cleared; and the stasis, which is the first step in a local necrosis, is removed. Not only is no local anæmia produced, but there is actually an arterial hyperæmia; there

is an increased supply of arterial blood to the focus of inflammation, which, besides its effect on the bloodvessels, may reasonably be supposed to improve the nutrition of the tissues, and so to counteract the tendencies of inflammation. The antiphlogistic action is clearly proportioned both to the amount of blood withdrawn and to the rapidity of its withdrawal, and its action is notably greater if the blood can be withdrawn from the circulation between the region of the inflammation and the right side of the heart.—*Lancet*, April 15, 1882.

MEDICINE.

The Etiology of Tuberculosis.

The discovery originally made by Villemin, that tuberculosis could be transferred by inoculation to the lower animals, though frequently confirmed, has been as often denied; so that even now, in spite of the positive experiments of Cohnheim and Salomonsen, Baumgarten, Tappeiner, and others, the greatest doubt exists as to whether tuberculosis is actually an infective disease or not. The recent experiments of Robert Koch, however, appear to establish beyond doubt, the truth of the infective nature of this morbid process. After abandoning the old methods of examination, which failed to give any satisfactory proof of the presence of bacteria in tubercle, he succeeded in perfecting a method of staining, by means of which he was able invariably to find a characteristic bacillus in all tubercular tissues.

The tissues are prepared in the ordinary method for similar observations, and either spread on a cover slip and then dried and heated, or the sections of the organ are cut after previous hardening in alcohol; the cover glass or section is then immersed for twenty-four hours, when cold, or one hour when heated to 40° C., in a staining fluid of 1 c.c. of a concentrated alcoholic methylin-blue added to 200 c.c. of distilled water, to which, after repeated shaking, 0.2 c.c. of a 10 per cent. solution of potash is added. The cover glasses or sections are then covered with a concentrated aqueous solution of vesuvin, and after about two minutes washed in distilled water. By this means the blue staining of the tissue is transformed into brown while the bacteria retain their bright-blue colouration, in which, with the exception of the lepra bacillus, they differ from all other bacteria.

The bacteria demonstrated by this process are rod-shaped, and, therefore, belong to the group of bacilli. They are very thin, and about one-fourth or one-half as long as the diameter of a red blood-corpuscle, although they may attain a much greater length. They closely resemble the bacteria of leprosy, but are distinguished from them by being somewhat narrower and more pointed at the ends, besides being incapable of being stained by Weigert's process.

These bacteria are found in all localities where the tubercular process is active, and are arranged in heaps, often in the interior of the cells, as occurs with the lepra bacilli, though numerous free bacteria, especially at the borders of such collections, are also found. When the height of the tubercular process has been reached, the bacilli are then found in smaller numbers and in small groups, associated with faintly coloured and scarcely recognizable bacilli, which have probably died or are then passing into an inactive condition. When giant-cells are found in tuberculous tissues, these bacteria are nearly always to be found in their interior, and when the tubercular process is slow, this is the only locality in which

they are to be found. Dr. Koch succeeded in detecting these bacteria in eleven cases of tuberculosis occurring in man, not only in the tubercular nodules in the lungs, but in the tubercular infiltrations of the spleen, liver, kidney, and pia mater. Twelve cases of pneumonia and bronchitis were also examined, with the result of the detection of the bacilli not only in small groups at the edge of the tubercle, but more abundantly in cavities, where they were associated with other bacterial forms from which they were readily distinguished by their behaviour with vesuvin. They were also found occupying the usual situations, as indicated above, in ten cases of bovine tuberculosis, and in the bodies of three monkeys dying from tuberculosis. A very large number of experiments were made with inoculations of tubercular matter from various sources, and in 172 guinea-pigs, 32 rabbits, and 5 cats, the entire number experimented with on this point, the characteristic bacilli were found in the lungs of the injected animals. His culture experiments, sterilized ox-blood serum being used as the cultivating fluid, furnish the most satisfactory proof as to these bacilli being the causative influence of tuberculosis. Small quantities of tubercular matter were added to this culture fluid and maintained at a temperature of 40° C., the access of other organisms being prevented for ten days, when fine white spots were noticed to form on the surface of the serum, which under the microscope proved to be the developing bacteria. When a small quantity of this infective fluid was injected into the anterior ocular chamber of guinea-pigs, and even cats and dogs, which do not ordinarily become tubercular, general tuberculosis made its appearance in about ten days, and ran a rapid and fatal course.

Several points of contrast were noted between the conditions necessary for the development of these and other bacteria, the most marked being that they require a temperature of from 30° to 40° C., and can, therefore, not develop outside of the body, thus differing from the parasitic cause of splenic fever.

Having thus proved the parasitic nature of tuberculosis, Koch attempts to explain the origin of these bacteria, and the manner in which they enter the organism. As regards the latter point, their great abundance in cavities could readily cause their presence in expired air, which would be thereby contaminated, and serve as a means of conveying the disease to others; they were also found in the sputa of phthisical patients, which, even when dried, retains its virulence, and the power of producing general tuberculosis, when introduced into the circulation.—*Berlin Klin. Woch.*, April 10, 1882.

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Relapsing Fever.

An extensive epidemic of relapsing fever prevailed at Konigsberg during parts of the years 1879–80, lasting, in all, about fifteen months, and during that time no less than 360 cases were under treatment at the municipal hospital. An account of the chief facts of these cases, which has been published by Dr. MESCHEDE in Virchow's *Archiv*, contains many details of value regarding the clinical history of the disease. A very remarkable feature of the epidemic is the great preponderance of males among those who suffered. Although males usually suffer more than females, the ratio, in ten thousand cases collected by Murchison, was only ten to six, whereas, at Konigsberg, the proportion of males was 85 per cent., and of females only 15. This unusual feature was chiefly due to the prevalence of the disease in the low lodging-houses and prisons, and among tramps. As in other epidemics, a large number of the patients (one-half) were from eighteen to thirty years of age, and this special prevalence of the disease at the period of life at which the power of resisting morbific agencies is greatest, shows how much the influence of contagion preponderates over predisposing conditions.

In the month in which the epidemic of relapsing fever reached its height, exanthematic typhus made its appearance, but certain facts observed showed very clearly that there was no direct relation between the two diseases. Two patients were seized with relapsing fever at the end of an attack of typhus, but in four patients typhus developed while they were under treatment for relapsing fever. The cases observed presented very different degrees of intensity and course. Some were so slight that, had it not been for the prevalent epidemic, their nature would scarcely have been suspected; 58 of the cases had only one febrile attack, 120 had two, 107 had three, 7 had four, and 2 had five distinct attacks. The total mortality was near the average, about 7 per cent. Almost all the fatal cases presented grave complications—pneumonia, the symptoms of the so-called "bilious" variety, delirium, etc.; and *post mortem* there were also found meningitis, abscess of brain, pericarditis, fatty-degeneration of the liver, infarction and suppuration in the spleen, tuberculosis of the lungs and intestinal tract. Death occurred most frequently in relapses after the first, very rarely during the first relapse or during the primary attack. The duration of the individual febrile periods was, for the first, six or seven days; for the second, four or five days; for the third, three or four days; for the fourth, one or two days; while the fifth attack did not exceed one day in duration. The first intermission lasted for seven or eight days, the second nine or ten days, the third eleven or twelve days. These periods are rather longer than those noted by other observers.

The highest temperature was usually attained on the last day, or the last day but one, of the first relapse—*i. e.*, immediately before the second remission; the highest temperature observed was 107° in two cases. The greatest pulse frequency was observed at the same period. The greatest fall of temperature at the end of a relapse was from 104.2° to 92.2°, or a fall of twelve degrees. Cutaneous complications were observed in a few cases, erysipelas, lichen, miliaria, herpes, boils, and carbuncles; roseola was observed in cases complicated with exanthematic typhus, but in no case of uncomplicated relapsing fever. Glandular swellings were noted in a few cases only. Diarrhœa was present in nearly half the cases, but was usually a late symptom, the early stage of the disease being marked by constipation, which in a few cases existed throughout. In 8 per cent. of the cases jaundice was present, and pneumonia occurred in nearly the same proportion. Epistaxis was also present, but occurred chiefly at the onset of the disease. Delirium was relatively infrequent, being noted in only 36 cases. Convulsions, opisthotonos, and paralysis of one arm were noted as rare complications on the side of the nervous system. Disease of the middle ear was found in 15 of 180 cases especially examined (8 per cent.), and intraocular affections in 6 cases (or 3½ per cent.).

The spirillæ of relapsing fever were found in almost every case during the attack, and also in the cases of the "bilious" variety, the "bilious typhoid" of German writers. In one of the latter cases they were found, twenty-four hours after death, in large quantities in the blood of the hepatic vein. In several of these cases an enormous enlargement of the spleen was noted, and the follicles were found to be in a state of purulent liquefaction.—*Lancet*, April 15, 1882.

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Treatment of Yellow Fever by the Permanganate of Potash.

It is well known that the Mexican government has offered a prize of five hundred thousand francs (cien mil pesos) to the discoverer of a specific for yellow fever, and we learn from the *Chron. Med. Quir. de la Habána*, Feb. 1882, that Dr. ROSADA claims to have found a treatment which, if not specific, at least is successful in saving a large number of cases.

The method presupposes the necessity of oxygenating the large quantities of carbon in the blood produced by the microscopic vegetable organisms which are formed and then decompose in the blood. For this purpose, the oxygenation of the inspired air and the frequent use of baths and injections of permanganate of potash, so as to admit of the absorption by the skin and rectum of oxygen, which is so readily yielded by this substance. It is also recommended the food should be salicylated.

This treatment of Dr. Rosada does not fulfil the conditions required to obtain the prize offered by the Mexican government, since it is directed towards the effect and not the cause of the disease. It seems, however, to deserve serious attention.—*Journ. de Méd. de Paris*, April, 1882.

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Symptoms of Trichinosis in Man.

Prof. GERMAIN SÉE describes four forms in which this disease may occur in man: the gastro-intestinal, rheumatoid, œdematous, and typhoid. The gastro-intestinal form is characterized by diarrhœa and vomiting, and, although the symptoms might indicate cholera, the absence of the peculiar rice-water discharges, and, above all, the presence of profuse sweating and great muscular prostration, serve to prevent the diseases being confounded.

In the rheumatoid form, great muscular pain and feebleness are the characteristic symptoms; in later stages other symptoms may arise from the invasion of the muscles of the larynx and chest by the parasite.

The œdematous form is more characteristic. A unilateral œdema of the face, with great prostration, gastro-intestinal trouble, and rheumatic pains, and without albuminuria or heart disease, is almost pathognomonic.

The typhoid form closely resembles typhoid fever, from which it is principally distinguished by the profuse sweats, œdema of the face, and rapid fall of the fever. Nervous symptoms, such as numbness, tingling in the limbs, are generally slightly marked.—*Journ. de Méd. de Paris*, Feb. 25, 1882.

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A New Tract of Spinal Degeneration.

Dr. HADDEN, at the meeting of the Pathological Society of London, held April 4th, showed microscopical specimens, taken from a small fragment of the upper cervical region of the cord, which was given to him by Professor Greenfield. The specimen, which had been lying by in spirit for nearly two years at the Brown Institution, was said to have been taken from a patient suffering from locomotor ataxy. Unfortunately he had been unable to get the clinical history of the case. The value of the observation was, therefore, purely pathological. In front of each crossed pyramidal tract—in that part of the cord known as the anterior root-zone, or Flechsig's fundamental region of the lateral columns—is a symmetrical area of degeneration. No other change, either in the gray or white matter, is visible. Although the case was supposed to be one of locomotor ataxy, the posterior columns are quite intact. The degeneration does not appear to be due to overgrowth of the neuroglia, but is apparently granular. Under a moderately high power there are seen at the boundaries of the degenerative area swollen axis-cylinders, together with amyloid bodies. The latter are probably artificial, and depend on the way in which the specimen has been preserved. The morbid area itself seems to consist of a confused mass of granular *débris*. The bloodvessels are thickened, and in some parts contain numerous blood cells. As to the significance of this degeneration, little can be said in the absence of the clinical history. It is almost certain, however, that it is not secondary to a cerebral lesion, for in that case we should expect a unilateral and not a double spinal

lesion. It is impossible to say whether it is a primary spinal lesion, or secondary to disease either of the cord itself or of the peripheral nerves. The lesion is probably ascending, for no trace of degeneration was found in sections made at a higher level than that at which the section shown this evening was taken. In his work on "Diseases of the Spinal Cord," Dr. Gowers figures a degenerative tract which is identical in position with the one just described. In this case the lower end of the cord had been crushed. There was secondary degeneration of the columns of Goll, as well as of the tract just referred to. In the case of Dr. Gowers, sensation was profoundly impaired; and hence he infers that some form of sensation is conducted in this region. As yet, the existence of this tract is supported only by these two observations. In his recent work on "Spinal Localization," Charcot remarks that the region in front of the crossed pyramidal tracts has hitherto not been found the seat of system-degeneration. Dr. Gowers, who has seen the specimens now shown, believes that the degenerative areæ are identical in position with those figured and described by himself.

Dr. GOWERS observed that he was not quite certain whether the degeneration was the same as in Dr. Hadden's specimens. The tract, he said, had not exactly the same form in both cases, and it was impossible to say whether they occupied precisely the same region. If they were the same, then Dr. Hadden's case was of great interest, as tracing up the degeneration a little higher than he had himself been able to do. Degeneration of the medulla in this region had not often been observed, but he believed that it was an ascending degeneration, and involved a tract of fibres concerned with the conveyance of sensory impressions. This view was confirmed by some recent observations of Flechsig.—*Med. Times and Gaz.*, April 22, 1882.

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Spasms of Muscles of Neck.

Dr. SAMUEL CABOT reports the following case of spasm of the muscles of the neck occurring in a type-setter, aged twenty-nine. His family and personal history exceptionally good. Physique better than the average. April 28, 1878, after six months of uninterrupted work at setting type in an over-heated, low-studded room, by an open window, averaging ten and frequently passing fourteen hours at his post, the patient was seized with muscular twitchings of the head and neck, the chin being jerked violently toward the *right* shoulder and oscillating between that point and the median line, where it was impossible to keep it.

Large doses of morphia hypodermically produced temporary relief, but in Jan. 1880, he was seized again, the head this time "veering gently but firmly to the *left* and remaining there persistently." Worked for eight weeks wearing a strap, the symptoms increasing in severity until, at their maximum, the head twitched violently from side to side at the rate of forty oscillation a minute for sixteen hours. Had recourse again to subcutaneous injections of morphia, began to improve about the 1st of May, and the 10th of June resumed work, feeling freer from all symptoms than at any time since the first attack. This immunity, however, was of short duration. In three weeks he was seized suddenly again, and from that time (July 4, 1880) until now he has never been entirely free.

The galvanic current was applied daily to the right sterno-mastoid with slight relief in severity of spasms at the end of six weeks.

Intramuscular injection of the sulphate of atropia in doses of one-sixtieth of a grain, and of curare one-third of a grain, the application of cantharidal collodion and of the tincture of calabar bean to the affected muscles, and ice to the spine, were all tried in turn without effect, except in the case of calabar bean which produced temporary relief for an hour or two after application.

The question of cutting down upon and stretching the spinal accessory nerve at its point of distribution to the affected muscles was entertained, but deemed inadvisable till milder measures should have failed.

At the suggestion of Dr. A. T. Cabot it was resolved to try the effect of fixation in a plaster bandage in the manner described by Delore in the *Gazette Hebdomadaire* for March 22, 1878. The good effect of this apparatus in tonic spasm of the muscles of the neck encouraged the hope that it would be equally efficacious in controlling the clonic spasms of our patient.

The head was accordingly held with the chin pointed somewhat away from the side towards which it tended to be drawn, and the head and shoulders were then enveloped in a plaster bandage.

No inconvenience was experienced from wearing the casque after the first few days. On the contrary, the patient expressed intense relief from the total cessation of the muscular twitchings which were now rendered impossible. This apparatus was worn for eight weeks, the patient resuming his work at long hours without experiencing any return of his trouble.

On removing the casque at the end of eight weeks the muscles were found to have lost their rigidity and to have regained their normal softness. For seven days there was no return of the spasms, and the patient was able to maintain the chin in the median line or turn it to either side without any effort or pain. At the end of a week there appeared slight symptoms of returning trouble, and at his request a second casque of plaster of Paris was applied.—*Bost. Med. and Surg. Journ.*, April 27, 1880.

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Retro-Pharyngeal Goitre.

Dr. O. CHIARI reports in the *Monatsch. f. Ohrenheil.*, No. 11, 1881, two recent cases of this character. After having established the diagnosis with the aid of numerous exploratory punctures, he made up his mind to remove the tumour; the patient, however, died of pyæmia, consecutive to an abscess caused by the punctures before the operation could be performed.

In the second case, that of a young man sixteen years of age, there was a soft tumour situated in the posterior wall of the pharynx, and which showed no improvement under various methods of treatment. It was readily determined that the tumour was connected with the right lobe of the thyroid gland.

In an analogous case, seen four years previously, puncture had been followed by only a few drops of blood. Both lobes of the thyroid were greatly hypertrophied; they continued to do well under iodine treatment alone.—*Rev. Mens. de Laryngol.*, March 1, 1882.

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The Prognostic Value of a Sub-Clavicular Tympanitic Percussion Sound.

From a careful study of the bearing of this physical sign on the prognosis of pleuritic effusions, Dr. J. GRANCHER draws the following conclusions: He believes that more can be learned as to the probable progress of an exudative pleurisy by the study of the apex of the lung than by the portion covered by the effusion. He believes that when a tympanitic percussion note is found in the sub-clavicular region, coincident with an increase of vocal fremitus and respiratory vigour, the upper lobe is in a perfectly healthy condition, and is supplementing by increased action the loss of respiratory surface below. When the tympanitic note is accompanied by increased vocal fremitus but abnormally feeble respiration in the apex, it indicates that the upper lobes are the seat of a congestion, whose nature can only be determined by the subsequent progress of the case. When the tympanitic sound is associated with decreased vocal fremitus and respiration, Dr. Grancher believes that ordinarily it will be found that the bronchi are compressed and the apex œdematous.—*L' Union Méd.*, April 1, 1882.

Treatment of Special Cases of Empyema by Thoracentesis and Simultaneous Injection of Purified Air.

Mr. R. W. PARKER read a paper with this title at the meeting of the Royal Medical and Chirurgical Society on April 25th. The author commenced his paper with the record of a case of empyema in a child aged three years and three-quarters, who had been in the East London Children's Hospital under the care of his colleague, Dr. H. Donkin. The physical signs pointed with great clearness to a very large effusion, but on attempting aspiration only four ounces could be withdrawn. A few days later a further attempt was made, with no better result, although the chest wall was punctured in two or three places. Finally a free incision was made, when between forty and fifty ounces of fluid were got out. The child ultimately recovered with hardly any deformity, although she had an attack of smallpox while the empyema was still discharging. The mechanism of tapping was then referred to. He reminded the Society that it was *vis a tergo* which expelled the fluid rather than a *vis a fronte* which sucked it out. Either the lung re-expanded, or the diaphragm rose, or the chest wall fell in. There were cases, however, in which, owing to rigidity of the chest walls and binding down of the lung, this expulsive force was reduced to a minimum, and additional means became necessary in order to empty the abscess cavity. Dr. Bouchut, of Paris, had published a case similar to his own, and had proposed to forcibly expand the lung through a tube introduced into the bronchus. Instead of this somewhat heroic treatment, it was suggested that filtered and carbolized air should be introduced into the pleural cavity in order to displace the fluid. A suitable apparatus for this purpose was shown, and its mode of use demonstrated to the Fellows present. At the completion of the operation it was stated that the air in the empyema cavity ought to be somewhat less dense than the external air, so that the lung might be in a position to re-expand from the first, while the gradual absorption of the air would keep up that advantage during the period of cure. It was contended also that the presence of air in the chest, under such circumstances, by supporting the vessels would tend to hinder the reaccumulation of fluid which a condition of vacuum, as under ordinary circumstances, would rather tend to promote. A case, under the care of Sir Symes Thompson, in which this plan of treatment was successful, was referred to. Instances also were mentioned in which there had been difficulty in withdrawing the fluid, depending on other causes, and particular stress was laid on them, for in such cases the injection of air into the pleural cavity would not suffice to overcome the difficulty. The author especially emphasized that his "plan of treatment is adapted chiefly for those cases in which the difficulty of getting out the fluid depends on rigidity of the wall of the empyema cavity." This condition is most likely to occur in adults, although the case mentioned at the commencement of the paper was a typical one, occurring in a young child. He recommended its trial before "free incision, which is a somewhat severe measure," is adopted.

Dr. SYMES THOMPSON said that in his patient's case, referred to by the author, the result of the plan, especially in freedom from the cough and discomfort, which often compel cessation of aspiration, was very satisfactory. He did not think the double opening necessary, and had recently adopted a device whereby air was admitted through the aspirator canula. The method, as stated, was applicable to cases of chronic effusion with rigid chest walls; but although it might be of service in serous effusion, free openings were probably necessary in purulent collections, because all experience points to the desirability of free drainage in such cases. Mr. Marshall had lately indicated an anterior opening

as the best site for puncture, that being the place selected by nature; but he (Dr. Thompson) thought a lateral position was more favourable for drainage. The ascent of the diaphragm interfered with free drainage in cases of opening in the posterior axillary line. As regards Mr. Parker's plan, the replacement of the fluid by purified air was an advantage; but it was open for discussion whether air or some fluid was the best medium.

Dr. DOUGLAS POWELL thought the idea ingenious, and said the case mentioned was one to which it was particularly adapted. The effusion was of old standing and the lung had been long bound down. In another case, under his own care, at Brompton Hospital, Mr. Hicks had performed an analogous operation. It was one where fluid had to be removed without altering the pressure within the chest, for it was complicated by a diseased and excavated lung; and it was feared that the mere removal of the fluid might induce rupture of the cavity. It was a question whether the replacing of fluid by air was not better done by making a free opening under the carbolic spray. In the first example given in the paper it was difficult to conceive that in a young child sixty-three ounces of pus should be retained in the chest during an attempted aspiration, unless the opening had become closed. He remembered the case of a lady where Mr. Arnott operated. It was a large empyema; and although a long bistoury was plunged up to the hilt, the fluid did not escape. It was quite a recent effusion, and its retention could hardly be explained on Mr. Parker's hypothesis. It was rather due to a loose layer of lymph lining the costal pleura, which may not have been incised and had blocked the opening. This seemed to be the case, since after a plug had been left in the wound a sudden evacuation of pus took place in the night, probably from the lymph becoming softened. The cases suitable for Mr. Parker's method were rare, being limited to those of rigid thorax and bound-down lung. In serous cases it was no advantage to remove all the fluid, the great object being to give rest to the lung, which was not obtained if all the fluid was removed; and it was doubtful whether replacing a pleura partially full of fluid, with carbolized air quite filling the pleura, was a gain. In purulent effusions the best method is to make at once a free incision. He advocated the employment of a manometer attached to the side tube, as giving information as to whether the canula were blocked, and whether the pressure in the chest were positive or negative.

Dr. REGINALD THOMPSON said that the cases related in the paper did not support the value of the author's suggestion. The first case was inapplicable; the crytometric tracing showing clearly that the empyema was pointing in front. In the case in which the plan was adopted only two ounces more fluid were evacuated than at the previous aspiration, and the measure required an additional opening. Nor did he think the third case supported the method.

Dr. COUPLAND considered the plan worthy of adoption in cases of chronic effusion in old subjects; and mentioned a case in point where a hemorrhagic effusion became purulent apparently in consequence of aspiration under these conditions, an issue which probably would not have occurred had pure air been injected to replace the fluid.

Dr. WARNER urged the special advantages of a double incision, as allowing of the free entrance into and exit of air from the pleural cavity. The lung remains at rest, and the process of granulation on the diseased surfaces takes place satisfactorily. In two cases so treated the lung had completely re-expanded. Mr. Parker's method was likely to be useful in some cases, but it did not give rest to the lung.

Mr. F. HICKS had introduced air into the chest on this plan in three cases. The first was one of chronic effusion of six weeks' duration. Three weeks after

operation fluid was still in the chest, and no further operation was necessary in that case. The second was one of acute empyema, in which air was introduced alternately with the extraction of fluid. No marked result ensued, and free incision was made later. The third was that referred to by Dr. Powell, in which air was introduced to prevent too rapid effusion in a case where the lung was much diseased. Air was introduced alternately with removal of the fluid until thirty or forty ounces had been withdrawn. It must be remembered that as soon as air is introduced into the pleura it is impossible to withdraw all the fluid unless the trocar be inserted at the lowest point. For that reason he had supplemented this method by a plan for washing out the sac at the same time and through the same opening. Air is absorbed somewhat rapidly, and in Dr. Powell's case rupture of the lung took place three or four days after the operation, and a fistulous pneumothorax formed. In this case the patient was in a low state, but after the formation of the fistulous pneumothorax an incision was made, and he lived some time after. The cause of failure in aspiration was not pushing the trocar in deeply enough at the first plunge. Mr. Hicks showed his modification of Mr. Parker's apparatus, which combined washing out with fluid and injecting air as well. Cough at the close of the operation was undoubtedly prevented by this method, but it might also be prevented by an elastic bandage round the chest.

The PRESIDENT could not understand how there could be such rigidity of the chest walls in a child as to prevent the outflow of fluid. Moreover, the pressure of the abdominal viscera and the expansion of the other lung would act in expelling the fluid even if the wall itself were rigid. It was assumed that air is absorbed slowly, but surgeons know how rapidly it could be absorbed. Therefore, the injection of fluid was equally safe; and some have suggested to replace the pus by oil. The old surgeons used to inject a decoction of barley. If air were injected the fluid could not be got rid of unless the opening were low, and air could be just as well, if not better, admitted by means of a free opening, which does not exert any force on the lung one way or another. Mr. Parker's plan was applicable to cases of rigid chest wall, but he would put the author on his guard against sources of fallacy.

Mr. PARKER, in reply, said he was aware that the method would be open to discussion and objection. The title of the paper was, "Suggestions for the Treatment of Special Cases of Empyema," and he had referred to cases in the paper in which there were other difficulties than rigid chest walls, for the purpose of showing that he was alive to some of these other difficulties. It was clear that the present methods of treating some cases were insufficient; for since the time when Dr. Symes Thompson had allowed him to operate on one of his cases, this new plan had been tried and elaborated at Brompton Hospital. He had suggested that this plan should be tried previous to free incision, in the hope of being able to avoid that necessity, but was well aware that free incision secured excellent results, though in some cases surgeons were quite unable to close the wound, owing to the non-collapse of the empyema cavity. In some cases of serous effusion the fluid re-collects rapidly; in such it might be preferable to substitute air for the fluid, and the conditions governing absorption would probably not be the same as in the healthy pleura. In the particular case related he had taken every precaution to avoid fallacy; he was possibly influenced by Bouchut's case referred to, and by the fact that a cavity in which the needle could be freely moved not infrequently remained on the cessation of the flow of fluid. If such were the case, there must be more or less of a vacuum—a condition most favourable to reaccumulation of fluid. Mr. Parker demonstrated his apparatus at the close of the meeting.—*Lancet*, April 29, 1882.

Primary Cancer of Lung.

At the meeting of the Pathological Society of London, held April 18, Dr. FENWICK showed a specimen of malignant disease of the right lung; he considered it to be a cancer, but as no sufficient microscopical examination had been made, this question remained doubtful, and was referred to the Morbid Growths Committee for settlement. He referred to the rarity of primary cancer of the lung, and gave some interesting statistics on this point. If the now generally accepted embryological classification of cancer be true, there is no difficulty in accounting for primary cancer in the lung, since epiplastic elements largely contribute to its formation. Undoubted cases of primary cancer have been recorded from time to time; though, compared with some other organs, the lungs are remarkably exempt from this form of disease, despite the varying and almost constant irritations to which they are subject. During the discussion, Mr. Butlin referred to the dissemination of cancer by the inhalation of cancerous particles from a diseased tongue. This view has frequently been advanced, but the grounds for accepting such a method of inoculation or grafting do not appear to us sufficient. It is well known that all attempts to engraft cancer even on animals predisposed to the disease, such as female dogs and cats, have hitherto failed; thus, while it would be premature to deny the possibility of such a mode of infection, it seems somewhat hazardous at present to trace a causal connection between lung and tongue cancer, such as the one just referred to, while there are other and more usual methods of accounting for its spread. Thus, the lymphatics about the tongue are numerous, and are early implicated in disease of this organ. The blood into which the lymph is poured at the root of the neck after passing through the heart next circulates in the lung, and hence it is not difficult to understand the frequency with which these organs are affected with secondary deposits. There are still many interesting points to settle as to the histogenesis of cancer. For while the embryological doctrine of its origin holds good in a large proportion of the cases, yet a growth resembling true cancer is occasionally found in structures which are derived from the middle embryonic layer. Embryologists, it is true, are not agreed as to the exact origin of some organs; they would do well to study these moot points in the light of the pathological degenerations to which such organs (as the ovary and testis for instance) are liable.—*Med. Times and Gaz.*, April 22, 1882.

Artificial Feeding in Phthisis.

At a meeting of the Paris Medical Society (*Gaz. des Hôpitaux*, April 18), Dr. DUJARDIN-BEAUMETZ referred again to this subject, of which we have already given an account in the MEDICAL NEWS for Jan. 14, 1882. In his present communication he corroborates all that has been stated by Dr. Debove of the great success which attends the feeding, by means of the œsophageal tube, of patients suffering from phthisis, and who can retain no food. Successful as his own trials of the plans were, Dr. Beaumetz did not find them come up to those obtained by Dr. Debove, and he found, on investigating the reason of this, that that physician did not content himself with giving eggs and raw meat, but had the meat reduced to an impalpable powder, which is very promptly absorbed. Since M. Beaumetz has followed the same plan he has obtained results as satisfactory as those of Dr. Debove, and he has extended this mode of alimentation to hysterical patients suffering from incoercible vomiting. Food thus injected was not vomited, and the same fact has been observed in the wards of Prof. Charcot. At the discussion which ensued, Dr. Debove stated that he had received in his wards the visits of many hospital physicians, who were able to verify for themselves that the

phthisical cases so treated had undergone notable amelioration. The patients had become fatter, and several of them had gained twelve kilogrammes in weight in two months. In most of them the night-sweats had ceased, and the cough had much diminished, so that they seemed to be in a condition approaching recovery. In one case in which death was due to an incidental cause, enormous cavities were found at the autopsy, which were covered with granulations of a healthy nature. To obtain such an extraordinary amelioration it is requisite that these patients should be got to take enormous quantities of nutriment, so as to recover lost ground; and for this purpose they have to be submitted to a kind of training. They will thus take three litres of milk, 600 grammes af raw meat, a dozen eggs, and some powder of lentils. One patient took for sixteen days three litres of milk and twenty-one eggs. In order to insure as complete a digestibility of aliment as possible, the object is to bring the food over a large extent of surface in contact with the digestive juices of the stomach; and with this view milk is the most favourable diet, eggs also, and especially raw eggs, being very useful. The improvement is heralded in especially by the absence of diarrhœa, and by the increase of urea, which in several patients increased from fifteen to twenty grammes to seventy grammes per diem. Dr. Debove chops up the raw meat, and having reduced it to an impalpable powder, introduces as much as 600 grammes at a time by means of the tube, this representing two kilos. of fresh meat—which is truly an enormous dose. But the absence of diarrhœa, the increase of weight, the considerable augmentation of the proportion of urea, and the reduction of fecal matters to their minimum, demonstrates forcibly that this regimen is successful. The meat-powder is, moreover, perfectly digestible. M. Joffroy inquired of M. Beaumetz whether the hysterical subjects he had so successfully treated were only in the first stage of hysterical anorexia, or whether any of them were at the second period, when it had lasted for eighteen months or two years, these being the truly difficult cases in which all treatment usually fails. Dr. Beaumetz replied that in his cases the vomiting had not lasted more than three or four months. In the advanced period we have also to do with inanition, so that patients will die of hunger; but this period must not be waited for before recourse is had to artificial feeding. The curious point is that these patients retain nothing that is taken by the mouth, and do not reject that which is administered by the sound. M. Troisier mentioned the case of an hysterical subject convalescent from typhoid fever, who ceased vomiting after being fed by the tube; and the paroxysms of coughing brought on by the introduction of this did not induce vomiting, although, before, the slightest cough caused it.—*Med. Times and Gaz.*, May 6, 1882.

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Syphilitic Disease of the Heart.

In most of the cases of syphilitic heart disease on record, death has occurred suddenly, and the nature of the disease has only been revealed at the necropsy. The following case, therefore, lately reported by Dr. MANNINO in the *Giornale Italiano delle Malattie Veneree e della Pelle*, is of interest, from the fact that the diagnosis was made during life and verified after death. The chief points of the case are briefly as follows:—

A man, aged 36, was admitted into the hospital at Palermo, under the care of Dr. Federici, and stated that he had always had good health, until eight years before, when he contracted some venereal disease, which was followed by pains all over the body. These pains were relieved by iodide of potassium. Since that time, however, he had suffered every winter from an eruption on the lower limbs, and for a few months previous to admission he had had occasional attacks

of dyspnœa. These attacks had become worse during the last few weeks; a troublesome cough also added to his distress; and he gradually became too ill to continue his occupation. On admission, the patient was very weak, and complained of difficulty of breathing. Cough was frequent, sometimes dry, and sometimes attended by expectoration. The belly was swollen; both lower extremities were œdematous, and covered with coppery stains, pustules and scaly patches, some being ulcerated. There was also enlargement of several groups of lymphatic glands. The cheeks, lips, and tip of the nose were blue; the great veins of the neck were prominent and turgid, while arterial pulsation was very weak. The skin of the trunk and neck was mottled, and the radial pulse imperceptible. The hands were cold. The heart's impulse was diffused, and the exact situation of the apex-beat could not be defined. The pulsation was visible also in the epigastrium to the left of the sternal line. The area of cardiac dulness was not increased, the lowest limit being the fifth intercostal space. At the apex, the first sound was obscure, and accompanied by a very weak blowing murmur. At the base and at the second right intercostal space, the *bruit* was somewhat louder, and the second sound weak, but clear; but the *bruit* was much more distinct at the epigastrium than in any other situation. The percussion sound was normal over the anterior part of the chest; but the posterior thoracic parietes were œdematous. Slight mucous *râles* were audible in places; elsewhere, the respiratory murmur was normal. The area of hepatic and splenic dulness was somewhat increased. The urine was scanty, acid, specific gravity 1025, and contained traces of albumen.

From these various symptoms, Dr. Federici diagnosed—first, that the right side of the heart was chiefly at fault, because the *bruit* was more distinct at the base and towards the right than at the apex, and still more distinct in the epigastrium; secondly, that the disease was not in the valves, but in the muscular structure of the heart, because of the rarity of primary disease of the right side of the heart, the normal area of dulness, and the peculiar and very feeble way in which the heart contracted, together with the great increase of tension in the venous system and the emptiness of the arteries. Lastly, he diagnosed syphilitic disease, from the presence of the syphilitic rash, etc. Hypodermic injections of mercury and large doses of iodide of potassium were prescribed. Soon after admission, the attacks of dyspnœa became gradually more and more severe, especially during the night; but the patient slept pretty well in a semi-erect position. The pulse was regular, but never perceptible at the wrist, and even in the larger arteries—the femoral, for example—was very weak indeed. The temperature was usually below normal. The *bruit* became fainter, but was always heard best at the epigastrium. The sputa became bloody, the dyspnœa more and more urgent; and, finally, death occurred somewhat suddenly, after a meal, nine days after the patient's admission into hospital.

Post mortem, the pericardium contained about three ounces of clear serum. The heart was globular in form, and weighed 393 grammes (nearly 14 ounces); the enlargement being due more to the left than to the right ventricle. On the anterior surface of the right ventricle was a large whitish patch of fibrous induration, eight centimetres long and three centimetres wide. On the left ventricle was a similar patch, of the size of a five-franc piece; and other smaller patches were scattered on the surface. A hard fibrous cord, studded with nodules, followed the direction of the interventricular septum. These parts resisted the knife, were pale in colour, and creaked on section. The tricuspid valve was healthy, except a slight swelling on one of the cusps. The endocardium was opaque in patches. The left ventricle was considerably dilated. The mitral valve was healthy. The endocardium of the conus arteriosus was white, indu-

rated, and shining, like cartilage. The musculi papillares of both ventricles were pale and shrunken. Under the microscope, the affected portions of the muscular substance showed the usual appearances of syphilitic myositis. The lungs were adherent in places, partly emphysematous, and contained numerous infarcts. The liver showed a patch of syphilitic interstitial hepatitis in an early stage. The spleen was rather hard and large, and its capsule opaque, and adherent in parts to the thoracic wall. The kidneys were highly congested. The other organs of the body, as well as the large bloodvessels, were normal.—*Brit. Med. Journal*, April 15, 1882.

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Fistulous Communications between the Gastro-intestinal Canal and the Chest.

Dr. H. Tillmanns reports, in von Langenbeck's *Archiv*, Band xxvii., Heft 1, a case observed by himself and Dr. Neubert of Leipsic, of fistulous communication between the intestinal canal and right pleural cavity. The patient was a lad aged 15, who, on the morning of June 9, 1880, was seized just below his arms by a friend and swung forwards and backwards in sport. After his dinner he vomited twice, and during the following night was taken with acute pain in the right hypochondrium. This pain persisted and increased in severity, and the patient was compelled to lay up. On the ninth day, and after the tenderness in the region of the liver had been slightly relieved, signs of effusion on the right side of the chest were presented. On the fourteenth day, he was suddenly attacked with intense pain over the whole of the right side of the chest, and with increased tenderness in the abdomen. Dulness on percussion was made out over the whole of the right lung, except in the second, third, and fourth intercostal spaces near the sternum, where there was a well-marked tympanitic sound. At the same time the patient suffered much from dyspnœa, and presented symptoms of collapse. He was also very feverish. The space between the fifth and sixth ribs on the right side having been punctured, about a pint of thin greenish purulent fluid, with a decided fæcal odour, was withdrawn by aspiration. This exudation was mixed with fluid intestinal contents and with bile. On the sixteenth day, a free opening was made in the wall of the chest, and the purulent cavity was washed out with a solution of salicylic acid and drained. The external opening was covered by antiseptic dressings; and, during a period of four days after the second operation, the right side of the chest was washed out twice daily by a solution of permanganate of potash. Subsequently, and when the strength of the patient had improved, carbolic acid was substituted for the permanganate in the injections. The discharge, which, until the middle of August, occasionally had a fæcal odour, and presented minute fragments of food, diminished steadily, save with one relapse after premature removal of the drainage-tube on August 14, and, at the end of the fifth month, had altogether ceased. After an interval of six months from the date of the injury, the patient was quite well.

In his comments on this case, Dr. Tillmanns states that, from what he has been able to make out from a study of the literature of pathological communications between the abdominal and thoracic cavities, the formation of a fistula leading into the chest from any part of the intestinal canal is a very rare occurrence. Communications are much more frequently established between the upper portions of the digestive tract—the œsophagus and stomach, and the thoracic cavity. The best known example of such is a cancerous perforation of the œsophagus involving the pleura. Gastro-thoracic fistula is occasionally formed in cases of ulcer of the stomach, and of diaphragmatic hernia. Of much more frequent occurrence are cases of perforation of the diaphragm, by purulent collections formed in the liver or some other solid abdominal viscus.

The symptoms observed in this case soon after the receipt of injury and the occasional presence in the discharge of half-digested food indicated, in the opinion of Dr. Tillmanns, a rupture of the duodenum near its junction with the jejunum, and the attachment of the band of smooth muscular fibres known as Treitz's muscle. It is thought that the patient might probably have had ulceration of the duodenum, an affection which often runs a latent course until a sudden termination in fatal perforation. In consequence of this supposed perforation of the duodenum, suppuration, it is thought, had been established, the fæcal abscess having been either shut off from the abdominal cavity by inflammatory adhesions, or having, from its origin, been extraperitoneal. The pus might have passed along the yielding connective tissue or along the posterior abdominal wall, and finally have penetrated through the diaphragm, and set up fæcal pyo-pneumothorax in the right pleural cavity. Though regarding this as the most probable explanation of his case, Dr. Tillmanns would not altogether reject the theory of its origin in gangrenous diaphragmatic hernia, and in perforation of a small loop of intestine tightly constricted by the margins of a small orifice in the muscle. It is pointed out, however, that this view is opposed by the facts of the spontaneous closing of the fistula soon after thoracotomy, and of the complete recovery of the patient. In considering the probable course of the fæcal abscess from the abominal to the thoracic cavity, Dr. Tillmanns insists on the clinical importance of the interspaces free from muscular structure, which have been described by Henle as existing between the costal and vertebral origins of the diaphragm. These interspaces, occupied merely by opposed layers of peritoneum and pleura, are of importance with regard to the condition of diaphragmatic hernia, of subphrenic, hepatic, and renal abscesses invading the chest, and of large hyatid and other tumours in the upper part of the abdomen.

Dr. Tillmanns has collected twenty-two cases of fistulous communication between the chest and the intestinal canal. In fourteen of these cases, the fistula led from some part of the large intestine (vermiform appendix, ascending colon, hepatic flexure of colon, transverse colon), and in the remaining eight cases from the small intestine. In three cases, fistulæ leading from the duodenum had opened through the posterior wall of the chest, without having perforated the pleura. The most frequent cause of the fistulous communication, according to these collected cases, is perforating ulcer of intestine (fourteen out of the twenty-two cases). In five cases, the fistula was the result either of traumatic suppuration, or of gangrenous diaphragmatic hernia caused through injury. In one case, the communication between the chest and intestinal canal originated in a pulmonary abscess caused by the presence in a lung of a foreign body. In the cases in which the fistula resulted from perforating ulcer of the intestine, the vermiform appendix was the original seat of the disease in six instances, the hepatic flexure of the colon in two, and the duodenum in five. In three cases the fistula communicated with one lung, and in three other cases it passed between the pleura and the thoracic wall. In every case of perforating intestinal ulcer, the fistula was on the right side of the chest; of the eight cases of fæcal fistula that had originated in gastric ulcer, in injury, in action of foreign bodies, or diaphragmatic hernia, in five the fistula was on the left, and in three on the right side.

In some remarks on the treatment of thoracic fæcal fistulæ, Dr. Tillmanns states, that it is proved by his case, that this condition may be cured by thoracotomy and drainage of the cavity in the chest, and that spontaneous closing of the intestinal perforation may follow evacuation of an intrapleural and probably also of a subphrenic fæcal abscess. It is suggested, that resection of the perforated portion of intestine might be justifiably resorted to in cases of fæcal abscess with persistent intestinal communication. It is well known that good results have

been attained from antiseptic resection of the affected portion of intestine, in cases of false anus and of gangrenous hernia. Equally valid indications for such treatment might be presented in certain cases of thoracic fæcal fistula, and of subphrenic fæcal abscess. In many cases, also, of perforation of the œsophagus and stomach, cure might possibly be brought about in a similar manner, with or without stitching together of the divided organ, if it were possible to drain effectually the abscess caused by such perforation. Again, in recent cases of perforation at some portion of the gastro-intestinal canal, success might attend very early laparotomy and stitching of the perforated gut or stomach. The result of this treatment in such a condition would depend mainly on the points whether, and if so, to what extent, the contents of the digestive canal had been poured out into the peritoneal sac, and whether the consequent peritonitis were diffused or circumscribed.—*London Med. Rec.*, March 15, 1882.

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Vomiting of Urine.

MM. Generali and Tonini (*Chron. Med. Quir. de la Habana*, Dec. 1881) report the unique case of a syphilitic woman of 33 years of age, who recovered from an attack of double pneumonia, lasting ten days. This was succeeded by an acute peritonitis with serous effusions. Up to this time the urinary secretion had been normal, but it was now suddenly reduced to 500 grammes, and steadily diminished in quantity until there was complete suppression. The patient then commenced to vomit a fluid which resembled urine in all its physical characteristics, and on micro-chemical analysis it was found to contain all the constituents of the urine: urea, phosphates, chlorides, alkaline and earthy sulphates, carbonate and phosphate of magnesia, and large quantities of pigment. The microscope revealed the presence of epithelial cells of the œsophagus and stomach, and mucus and crystals of the uric acid type, which formed spontaneously by the decomposition of the urate of soda in the presence of the acids of the stomach. As long as the vomiting lasted, not a drop of urine was to be found in the bladder. In about a month the patient was completely cured.—*Journ. de Méd. de Paris*, Feb. 4, 1882.

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An Obscure Case of Duodenal Ulcer.

Dr. E. B. Gray reports the following case: J. J., aged fifty-eight, a retired college servant, between 5 and 6 P. M. on Sept. 24th suddenly vomited a large quantity of blood. On my arrival about a quarter of an hour afterwards, I found he had brought up by measure over twenty ounces of bright red blood. He was ordered twenty minims of tincture of perchloride of iron every three hours, to keep to ice and iced water, and to remain absolutely at rest on his back.

He was a very well-nourished man, and of healthy appearance. I could find no evidence of disease of heart, liver, or kidneys. The appetite was normal; epigastrium only slightly tender to pressure. The only history was that for two years previously he had had pain "across the pit of the stomach and through to the loins," seldom absent for many days at a time, and for the last month or so getting worse, but never accompanied by vomiting. He was very doubtful whether it had been at all influenced by what he ate. He had never passed blood by the bowel; he had not been losing flesh. No further hemorrhage occurred that day, and at 10 P. M. he seemed very comfortable. Soon after midnight the bowels became uneasy, and in the course of the next four hours he passed by the bowel between a pint and a half and two pints of dark clotted blood.

Sept. 25. Very blanched and prostrate, but no further loss of blood. Slept

much during the day, swallowing nothing but ice, iced beef-tea, and the perchloride of iron.

26th. Remained undisturbed until 3 A. M., when he was seized with violent epigastric pain, fainted, and died in a few minutes.

At the post-mortem examination the stomach and intestines were found full of blood. The sole lesion discoverable was a small deep ulcer, of the diameter of a split pea, clean-punched out of the otherwise healthy mucous membrane of the duodenum. At the bottom of the ulcer was a small perforation in the pancreatico-duodenal artery. The other abdominal organs were healthy. The chest could not be examined.

This case illustrates well the occasional extreme difficulty of diagnosing duodenal ulcer. Chronic complaints of pain at the pit of his stomach, with scarce any tenderness, along with ability to take food and maintenance of his bodily nutrition and appearance of health, had gained for this unfortunate man the reputation of a confirmed hypochondriac, and at one time of a malingerer. But duodenal ulcer may run a fatal course with even greater latency of symptoms than occurred in this case. In the *Transactions of the Pathological Society*, vol. ix., the late Dr. Murchison records a case of a finely developed man who died suddenly of peritonitis from a perforated ulcer of the duodenum, and who up to the time of his fatal attack had enjoyed excellent health, and never suffered from vomiting or any pain whatever after food or at other times.—*Lancet*, May 13, 1882.

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Localization of Intestinal Catarrh.

Inflammation of the mucous membrane of the bowel—intestinal catarrh, as it is now customary to term it, irrespective of its cause—may be of very limited distribution. It is true that this statement has been contested by some authorities, notably by WOODWARD, on the ground that specimens of such localized affection are rarely to be found in pathological collections. But inflammation of less severity is naturally of less extent than that which brings its subject to the post-mortem table, and the frequent clinical evidence of localized enteritis is fully confirmed by the systematic examination of the bowel in cases in which the intestinal affection merely complicates other diseases. Our knowledge of the variations in symptoms which attend these changes in locality is, however, still vague and scanty. By the occurrence of jaundice we recognize that the duodenum suffers; tenesmus points to the rectum; while by the position of pain and tenderness we may often guess with more or less accuracy at the part of the intestine which is chiefly diseased, but we know little or nothing of the influence of locality on other symptoms which attend inflammation of the bowel. To supply facts to bridge over this lacuna in medical science has been the object of some observations, continued with characteristic industry for a considerable time, by Professor NOTHNAGEL, of Jena, in which symptoms and pathological appearances were most carefully compared, and the extent of which may be judged from the fact that a microscopical examination was made of more than one thousand evacuations. The results have been published in the *Zeitschrift für Klin. Medicin.*

The first question which he has studied is the indication to be drawn from the character of the stools. The significance of the passage of pure mucus, as indicative of an affection of the sigmoid flexure, is well established. Scybala imbedded in mucus may, it is currently said, be due to an affection of any part of the colon, but Nothnagel asserts that this condition of stool is only met with when this disease is below the splenic flexure, and it is certainly indicative of a catarrhal condition. The same conclusion cannot, however, be drawn from the passage of large well-formed stools surrounded by a layer of mucus. The latter indicates a condi-

tion in which catarrh may easily arise, but not an actual inflammation. The absence of mucus does not exclude the absence of catarrh of the lowest part of the bowel, as several well-authenticated cases show. Mucus may, moreover, be passed in abundance, when ordinary examination of stools does not suggest its presence. In this state the stools are soft (not liquid) and apparently uniform, but a thin layer, between plates of glass, presents, under the microscope, numerous clear islets of pure mucus. This condition is of considerable importance in regard to localization, and indicates catarrh of the small intestine, with or without implication of the ascending portion of the colon. With such evacuations the lower half of the colon is always healthy. If the latter is affected, the mucus is found not only in the substance of the feces, but also on their surface. In some cases of catarrh of the whole of the large intestine, the stools are of a pulpy, almost fluid consistence, and contain small globules of mucus, but these are so large as to be visible to the naked eye. The microscopic globules come only from the small intestines. On the other hand, the former cases are distinguished from catarrh limited to the lowest part of the colon by the intimate mixture of the mucus and fecal matter. Of course, this conclusion does not hold good for the cases of severe dysenteric inflammation of the whole colon, in which pure mucopus is evacuated, or in which, in consequence of the damage to the membrane, mucus is no longer secreted. There is yet another form in which mucus is passed which is of diagnostic significance—globules of mucus coloured yellow by bile pigment. These are never found in catarrh which is limited to the colon; the small intestine is usually, and often chiefly, involved. The appearance is not infrequent in typhoid fever.

Another constituent of the feces which is of diagnostic importance is bile pigment. It is well known that under normal conditions the contents of the bowel cease to react, in a characteristic manner, to Gmelin's test, at or about the ileocæcal valve. The play of colours no longer commences with a conspicuous green. A characteristic reaction in the feces, or at least in certain of their constituents, indicates that there is an augmented peristalsis of the colon and lower part of the ileum. Nothnagel has never been able to obtain this reaction in the general mass of a consistent stool. If unaltered bile pigment is present, the consistence of the feces is always more or less liquid. A retention in the colon sufficiently long to give firmness is always attended with a transformation of the pigment. It is rare, under any circumstances, for the reaction to be obtained from the whole of the fecal mass, except in acute infantile enteritis. Much more frequently the unaltered bile pigment is found only in portions which contain much mucus. Sometimes the same evacuation contains both clear and yellow-stained mucus, the latter giving the bile reaction and coming from the small intestine, the former from the colon. The presence of the former was invariably found, post mortem, to be associated with catarrh of the jejunum and ileum. It implies an increased peristaltic action, which must, however, involve not only the small intestine, but also the colon throughout its entire length. If the greater part of the large intestine is healthy and the stools infrequent, no unaltered bile pigment may be passed, in spite of the existence of catarrh in the lower bowel. Micro-chemical investigation often shows that not only mucus but cylindrical epithelium contains unaltered bile pigment. The diagnostic significance of this epithelium is the same as that of the bile-stained mucus. The staining of the epithelium may be proved, post mortem, to occur in the small intestine, but only after detachment from the mucous membrane, since that which is still *in situ* is always colourless. Rarely, leucocyte-like corpuscles and fat globules, stained with unchanged bile pigment, may be found in the stools, and have the same significance as the epithelium.

The presence of unaltered fragments of food in the feces constitutes another

element of diagnostic significance, since their quantity indicates normal variations in different parts of the intestinal canal, being far greater in the small than in the large bowel. Fragments of muscular fibre are invariably present under normal conditions, and hence only a considerable excess can be regarded as pathological. The significance of this constituent relates only to the small intestine, for the colon has no influence on its presence. Whatever passes the ileo-cæcal valve is ejected without further change. A series of careful observations has shown that the digestion of muscular fibres is greatly hindered by pyrexia; that, in the presence of fever, an excess in the stools affords no diagnostic indication. Mere increased peristalsis, without fever or catarrh, is also capable of causing the excess; and if the motion of the contents of the intestine is not accelerated, intestinal catarrh does not increase the amount evacuated, and an excess therefore only points to such catarrh when other indications of this, such as mucus, are present at the same time. An excess of starch granules has a similar significance. Intestinal catarrh seems also to be without material influence on the amount of fat in the feces. The anatomical changes induced in the mucous membrane are absolutely without influence on the absorption of fat.

The conclusion of most previous writers, that physical examination of the abdomen furnishes but scanty indications for the localization of enteric catarrh, is confirmed by Nothnagel. An extensive series of auscultatory observations were made, the relative loudness of gurgling sounds in different parts of the abdomen being noted simultaneously by two observers, but the ready conduction of the sounds from one part of the abdomen to the other made definite localization impossible. Only when the noise was produced in the ascending or descending colon, and the small intestine contained liquid, was it inaudible on the other side. Nor does percussion teach much regarding the localization of intestinal catarrh, since the condition which usually obtains—less resonance in the central part of the abdomen than in the position of the colon—is also present in normal conditions. Even the alteration in the normal relative resonance of the two iliac fossæ, so frequent, as Traube showed, in typhoid fever, is produced by many conditions, and is of little diagnostic value. The study of the indication afforded by palpation confirms, but does not extend, the well-known significance of local tenderness and of local gurgling perceptible to the touch.

The last diagnostic point investigated by Nothnagel is the excretion of indican by the urine, which, as is well known, is increased in a remarkable manner in many affections of the gastro-intestinal canal. Unfortunately the extensive observations, including two thousand separate estimations of indican in the urine, of cases which were carefully watched, have yielded but little result. An increase was found in the majority of cases of intestinal catarrh and diarrhœa, and very often also in cases in which there was no intestinal affection at all. When the colon only was affected, however, no excess of indican was observed so long as the general condition of the patient was good. On the other hand, in all cases in which there was a decided catarrh of the small intestine, the indican was increased. So constantly was this found that Nothnagel was inclined to believe that the absence of an excess of indican gives ground for excluding catarrh of the small intestine, but his conclusion was rendered doubtful by a series of cases of exanthematic typhus, with severe intestinal catarrh, in which no indican was found in the urine. It may be doubted whether his previous conclusion is altogether invalidated by this fact; it may still hold good for the simpler forms of enteritis.

These laborious investigations, in a department of practical medicine often passed over as alike unpromising and uninviting, deserve the highest praise. They add materially to our knowledge of enteric symptomatology, and they show

how important are the facts which may be ascertained by a systematic study of the night-stool, and which has been too little regarded by the present generation of clinical observers.—*Lancet*, March 4, 1882.

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Jaundice in the Newly-born.

The mysterious jaundice which so often affects newly-born children has always given rise to much interest and many hypotheses, based for the most part on fancy rather than on fact. By some authorities its cause is referred to the liver, by others to the blood. Modern theories of jaundice render the former explanation the more probable, since the opinion that the elements of the bile are preformed in the blood has been practically given up, and with it falls to the ground the theory of "jaundice by suppression." Virchow believed that icterus neonatorum was merely a variety of the common catarrhal jaundice, and arose from duodenal catarrh, while Cohnheim has assumed that the bile formation of fœtal life is small, and is so suddenly increased at birth that the bile-ducts are not at first competent to carry the secretion away. Neither of these assumptions rests on any evidence. Another group of theories ascribes the jaundice to the disturbance of the circulation in the liver which occurs at the change from intrauterine to separate life. Hewitt and Weber believe that the distended veins compress the bile-ducts, while Frerichs has adopted an older theory of Morgagni, and suggests that the sudden diminution in the supply of blood to the organ leads to a passage of the secreted bile into the bloodvessels. The theory of Breschet, that the jaundice depends on changes in the colouring matter of the blood, and is thus hæmatogenic in nature, has been recently revived by Epstein, but it rests on considerations which are, with one exception presently to be mentioned, even more purely hypothetical, and its chief support is the feeble argument that other causes have not yet been demonstrated.

This lacuna in our knowledge of the subject is to some extent filled up by facts which Birch-Hirschfeld, of Dresden, has supplied in an article contained in a recent number of Virchow's *Archiv*. It is, he points out, very difficult to avoid associating the jaundice in some way with the disturbance of the hepatic circulation on the transfer of its chief blood-supply from the umbilical vein, especially when regard is had to the conspicuous congestion and œdema of the liver, well described by Weber, which occur in cases in which the circulation through the umbilical cord is interrupted before the respiratory movements, by their effect on the right heart, afford an adequate compensation. It is to the connecting link between the two phenomena that Birch-Hirschfeld's attention has been specially directed. He notes that the vessels in the hilus of the liver are surrounded by a dense layer of connective-tissue, which is continued into the organ along the branches of the portal vein, and that in cases in which there is venous obstruction in the liver, in consequence of hindered birth, this tissue is the seat of conspicuous œdema. A broad layer of gray pulpy tissue incloses the vessels, and is seen also around the umbilical vein in its diaphragmatic portion, and may also extend to the gall-bladder. The microscopical appearances of this tissue are those of œdema with a more or less abundant accumulation of round cells in the interstices of the tissue. That this swelling of the tissue must compress the bile-ducts is sufficiently obvious; and Birch-Hirschfeld has found that not only, under these circumstances, are the bile-ducts distended, but there may be a positive difficulty in squeezing the bile out of the gall-bladder into the duodenum, and in the latter there is a manifest deficiency of bile. In such cases, in which death occurs during the first day of life, commencing icterus may be distinctly detected; and the gradual increase of the jaundice in connection with this pathological con-

dition may be observed in patients in whom life continues longer, as cases reported by Birch-Hirschfeld demonstrate.

A difficulty, however, in accepting this theory is presented by the fact, which has been relied on by the advocates of the hæmatogenic origin of the jaundice, that the presence of bile-pigment can rarely be demonstrated in the urine. The cause for this is not very clear. Its significance is, however, lessened, if not removed, by an important fact ascertained by Birch-Hirschfeld—that in fatal cases of this infantile jaundice the presence of bile acids may always be demonstrated in the pericardial fluid, whereas they cannot be found in other children who do not present jaundice. This may be taken as proof that the colour depends on the presence of bile in the blood, and not on any mere destruction of blood-corpuscles and transformation of the blood-pigment; it may also be regarded as proof of the hepatogenic origin of the jaundice. By the definite theory of Birch-Hirschfeld all the characters, peculiarities, and date of this form of jaundice may be perfectly explained.

In very rare cases, however, jaundice of much graver type occurs in newly-born children. One cause of this is a congenital atresia of the bile-ducts; more frequently it is due to the compression of the ducts by syphilitic inflammation and growth—the syphilitic peripylephlebitis of Schuppel. Another form, which is extremely grave, seems to be developed by an infective process. The *materies morbi* enters by the navel wound, and is perhaps the same as causes puerperal fever in the mother, conveyed, it may be, by bacteria, since two forms of micro-organisms may be found in the blood of infants in this condition—spherical and small rod-shaped bacteria,—the latter probably identical with those proved by Koch to be associated with the septicæmia of the mouse. Further investigations are necessary to ascertain whether these correspond to two different forms of infection. Birch-Hirschfeld's observations, however, tend to show that the rod-shaped bacteria occur especially in the form in which the disease develops rapidly, as a virulent general infection, with a strong disposition to hemorrhage.

In these cases an arteritis umbilicalis has generally been found, and the conclusion has been drawn that this vessel is the channel of infection. Of sixty cases, phlebitis umbilicalis was found in eleven, simple thrombus in the vein in four, arteritis alone in thirty-two cases, and inflammation of both vessels in three. Nevertheless, even when the artery alone is conspicuously diseased, the liver as a rule shows intense alterations, inflammatory changes in the periportal and interacinose tissue, and acute degeneration of the liver-cells, which constitute strong reason for believing that the infection reaches the liver by the umbilical vein. After birth the varying pressure on the liver vessels, due to the cardiac and respiratory movements, causes an alternate emptying and filling of the remnant of the umbilical vein whenever the contraction of the artery arrests the circulation within it. Hence the conditions are most favourable in the artery for the local development of the morbid process, but in the vein for the systemic infection, and the movement of the blood in the latter may explain why the local changes in it are less intense. Birch-Hirschfeld describes three cases in which there was a central phlebitis of the umbilical vein and a pylephlebitis had developed at the opening of the umbilical into the portal vein, whereas the whole lower end of the former was free—a condition which can only be explained by assuming that the movement of blood in the vein carried the infectious material forwards, so that its action was exerted chiefly on the portal vessels. This condition may easily escape notice in an ordinary examination. No relation is to be traced between the intensity of the vascular change and the degree of the jaundice which is so constantly associated with this infection, but the former is always intense when the changes in the substance of the liver are well marked;

thus it seems likely that this jaundice also is of hepatogenic origin, and it is probably due, like the benign form, to the swelling of the periportal connective-tissue compressing the bile-ducts within the liver itself. We can thus understand that the degree of jaundice should lessen towards the close in cases of severe general infection. The conditions which favour the occurrence of the benign form of jaundice, premature birth, weak breathing, etc., also favour the development of the malignant variety if there exist any cause of septic infection.—*Lancet*, March 25, 1882.

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A Case of Chyluria treated with Benzoic Acid.

Dr. G. C. Roy reports the following case: A Mahometan female, aged twenty-four years, mother of two children, the last one being fourteen months old, applied to the Sooree Charitable Dispensary for treatment on the 29th of January, 1882, for milky urine. She noticed twenty days before that the urine on voiding coagulated into a jelly-like mass. This used to take place at night, but in the day it used to be clear and transparent. At times it would coagulate in the bladder and cause difficulty in micturition. She had a pale, emaciated look, and was subject to intermittent fever. Her appetite was craving; bowels regular. Beyond a feeling of uneasiness in the loins, she had no pain to complain of. There was no history of syphilis.

The urine brought for examination was passed at night. It had a turbid look, and had coagulated into a uniform jelly with slight tinge of red from the admixture of blood, and was here and there dotted with small red coagula. On microscopic examination there were found red blood-corpuscles crenated and shrivelled and crystals of triple phosphate entangled in a fibrillated mass. There was no filaria, but one broken specimen the identity of which was doubtful.

Ordered. Benzoic acid, grs. x *t. d.*

January 31. After taking nine doses of medicine, the character of the urine entirely changed. It was clear, of pale straw colour, and natural.

February 2. To-day the urine was somewhat red from admixture of blood, but there was no tendency to coagulation.

Continue medicine.

4*th*. The urine more bloody. The morning specimen was still of a paler colour, with slight sediment. In fact, the urine had more the appearance of hæmaturia than chyluria.

Omit benzoic acid. Tr. ferri muriat. ℥xx; inf. calumbæ, ℥j *t. d.*

7*th*. No change for the better. The urine was of rosy hue, and this morning had coagulated into a jelly as before.

No hæmatozoa detected under microscope.

Add benzoic acid, gr. x, to the tr. ferri muriat. mixture *t. d.*

8*th*. The coagulation has stopped, and the colour is paler than before.

12*th*. The urine quite clear and normal.

13*th*. The patient had an attack of fever, but the character of the urine remained unchanged.

20*th*. The improvement is stationary, and up to date (1st March) there has been no recurrence of symptoms.—*Indian Med. Gazette*, April 1, 1882.

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Multiple Fibromata of the Skin.

Prof. von Recklinghausen, of Strasburg, whose essay "On the Lymphatic Vessels and their Relation to the Connective-Tissue," 1862, has sufficed almost of itself to keep the author's name fresh in professional esteem, now comes for-

ward with another contribution to scientific medical literature.[1] The occasion of its publication is the twenty-fifth anniversary of the founding of the Pathological Institute, by Virchow, at Berlin, and the work bears on the title-page that it is a "Festschrift" offered to that illustrious teacher and leader of men.

The primary subject of the essay was a case of multiple fibromata of the skin in a woman, aged 55, who was brought to the Strasburg Hospital in January, 1879, and died, a few hours after admission, of bleeding from the lungs. The occasion was used to make a thorough examination of the external tumours, of certain coexisting tumours (neuromata) on the course of some of the nerves (lower extremity chiefly), as well as of a very obscure condition of the internal organs and their serous coverings. Subsequently the author had the opportunity of observing another case of multiple fibromata of the skin during life. Photographs are given of both cases. Besides the discussion of those two cases, the essay contains an elaborate *résumé* of all the available recorded cases of multiple fibromata and multiple neuromata, which will save the time of all subsequent inquirers into the subject. Cases of multiple morbid products in the body used to be the favourite opportunities of demonstrating the existence of a dyscrasia or diathesis or morbid state of the blood. When the structural complexity of the tissues came to be recognized, that general point of view was gradually abandoned, and attention was concentrated on histological analysis. When all the details are mastered, there can be hardly any doubt that we shall come back to the generalizing standpoint which had for a time to be given up. But Professor von Recklinghausen's judgment upon his first case will show how far off we still are from the simple generalizations of pre-microscopic times. The skin of the whole trunk, head, and limbs of the body examined was covered with soft, fibrous tumours (*fibro-molluscum*); there were fibrous thickenings (so-called neuromata) in the course of several of the nerves (branches of the sacral plexus, of the anterior crural, several intercostals, frontal, and supraorbital); there were fibrous nodules in both breasts. Leaving the external parts, there was some clear fluid in the abdomen, with adhesions in various parts; numerous small nodules on the serous coat of the stomach, mostly of miliary size and somewhat transparent; small outgrowths on the capsule of the liver, not amounting to circumscribed nodules like those of the stomach; on the surface of the diaphragm, right side, soft villous-like outgrowths; several large nodules, stalked or sessile, on the serous surface of the small intestine, two of them being of hemorrhagic appearance and sarcomatous structure; on the surface of the left kidney numerous white patches with translucent miliary nodules in them, and a few whitish nodules in the substance of the papillæ; in the liver a few small red spots with white centres; in the mucous membrane of the jejunum, several small nodules with one small ulcer; small ulcerations in Peyer's patches, with here and there a small nodule, not caseous, in the submucosa; in the lower part of the ilium the ulcers had become confluent and had thickened edges; a few follicular ulcers in the colon. Coming next to the thorax, the pericardial surfaces were united by adhesions, in the midst of which lay nodules, but these were "not undoubted fibromata;" small excrescences on the mitral valve; on the posterior wall of the trachea numerous miliary nodules (one as large as a pea), translucent, tough, sessile, with vascular surroundings; in both lungs numerous small centres of induration, partly in the form of miliary nodules, smooth-walled vomicæ in the right lung, and in the left a few circumscribed gray hepatizations of unusual dry-

[1] "Ueber die multiplen Fibrome der Haut, und ihre Beziehung zu den multiplen Neuromen." Von F. von Recklinghausen, Professor in Strasburg. Berlin, 1882. pp. 138. Five plates.

ness. Lastly, two or three soft tumours were seated on the periosteum of each tibia in front.

What, then, does Professor von Recklinghausen make of this extraordinary case, the *post-mortem* record of which he has drawn up with so much fidelity and completeness? He takes the fibromata of the skin as his point of departure; these were formations chiefly of the lower layers of the cutis vera (involving sweat-glands and hair-follicles in various ways), and they sometimes sent prolongations downwards, into which nerve-fibres could be traced. The latter circumstance was a link connecting the multiple fibromata of the skin with the coexisting fibrous thickenings on several of the surface-nerves of the lower extremity, thorax, and forehead; these are called neuromata, although the nerve-fibres are, generally speaking, passive and merely inclosed in the fibrous growth, as in the so-called ganglia which form on certain peripheral nerves where they are exposed to pressure. Both kinds of new formation are, therefore, grouped under the common name of neuro-fibroma. Further, the neuro-fibroma explanation is extended to the new formations in the interior of the body, or rather to a select few of them. Encouraged by a previous observation made by Sangalli, who also found multiple fibromata of the skin to coexist with numerous similar nodules of various sizes on the surface of the stomach, the author sought to trace a connection between the latter and the nerves of the gastric plexus. The nodules on the external surface of the stomach and intestine showed, to the naked eye, characters which distinguished them from the new formations of such diseases as tuberculosis and lymphoma; some of them were too large (cherry or walnut size); the miliary ones were too hard, and were isolated in the muscular coats, whereas tubercles are apt to become confluent on the serosa. Under the microscope they were composed of the same connective-tissue as the cutaneous tumours, fibrous, but scarcely at all fibrillar, and with a few small spindle-cells. Lastly, they were not subject to caseous degeneration. But were they in reality connected with branches of the gastric plexus of nerves? Only in the case of one small nodule on the stomach did Professor von Recklinghausen succeed in following a nerve-fibre into the midst of it; the task was accomplished more easily—and a figure is given among the illustrations—for a fibrous nodule of the mesentery. To eke out this somewhat scanty evidence, he adduces the fact that in the teased preparations from two of the stomach nodules there were found in the midst of the fibromatous tissue a number of large polygonal cells, whose protoplasm was finely granular and without fatty molecules, and whose nucleus was invisible. They were not, therefore, young giant-cells, but more probably atrophied ganglion-cells of the plexus myogastricus. The nodules in the trachea contained true giant-cells, as well as round cells; they had also a "degenerated centre," and they were real tubercles, and not miliary fibromata; so that the absence of nerves in them was the less surprising. The periosteal nodules of the tibia showed nerve-fibres in the sections, but the new growth, which appears to have been more sarcomatous than fibromatous, was not laminated around them. Again, the larger tumours of the serous membrane of the jejunum were also of the sarcomatous kind, and highly vascular, while they had no obvious relation to nerves, not even an accidental one. Lastly, it was not possible to trace any connection between the multiple fibromata of the breasts and the nerves of those organs; nerves were not even seen in the sections.

Thus far, in the negative direction and in the positive, does Professor von Recklinghausen carry his analysis: to the multiple fibromata of the skin he adds the fibrous thickenings on the external nerves, and he combines both under the name of neuro-fibroma. To these neuro-fibromata of the external surface of the body he inclines to add a few at least of the serous-membrane formations, as

neuro-fibromata of the sympathetic. There were, it is true, formations also on the pericardium, on the diaphragm, on the liver, on the kidney, in the trachea, in the lungs, in the liver substance, in the kidney substance, in the mucosa of the intestines, and in the breasts. There were also sarcomatous tumours of the surface of the jejunum, and of the tibial periosteum. What is to be made of all these curious manifestations of disturbed health, does not appear. Professor von Recklinghausen seems to regard them as the ninety-and-nine things that need no explanation. He has been arrested by the coexistence of multiple fibromata of the skin with fibrous thickenings on the course of some of the cutaneous nerves (chiefly at exposed stations), and he has been led into a theory of fibro-neuroma, which does not appear to contain within it any fruitful pathological idea, and which carries him only a little way over the case as a whole. Nothing shows more clearly than this bewildering eclecticism how distant that time is when we shall again be using the simple generalizations, the empirical but still philosophical language of diathesis or dyscrasia, which distinguished the pre-microscopic age.—*Med. Times and Gaz.*, April 15, 1882.

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Leprosy.

The following conclusions with regard to the bacterial nature of this disease are given by Dr. ALBERT NEISSER (*Virchow's Archiv*, Bd. 84, No. 3):—

1. Leprosy is a true bacterial disease caused by a special variety of bacteria.

2. These bacteria enter the organism as such, or, more likely, as spores, and remain in a state of incubation in certain depots, the lymphatic glands, perhaps, for a longer or shorter period of time. The term of incubation of these bacteria varies greatly, not only as compared with the incubation stages of other infectious diseases, but also in different cases of leprosy.

3. From the above-mentioned depots the disease spreads in the body, principally in the skin (lepra tuberosa), and notably in those regions exposed to insult, the face, hands, elbows, and knees, and also in the peripherical nerves (lepra anæsthetica). Other parts of the body, testicles, spleen, cornea, cartilages, and liver, are less subject to invasion.

4. The bacteria or spores give rise to inflammatory processes in organs or parts of the body which are supplied with bloodvessels, but in those parts where there are no bloodvessels to immigrations (Einwanderungen) of cells from the periphery inwards. The lymphatic cells containing spores or bacteria constitute the material of which the special neoplasmata of leprosy are made up. The specific action of these bacteria transforms the ordinary wandering cell into the specific cell of leprosy, the shape, course, and disappearance of which are characteristic.

5. Leprosy is probably an infectious disease, and its specific products are contagious. The disease is not only directly contagious, but also indirectly so, its specific bacteria or germs being transferred by various objects.

6. Leprosy is not hereditary.—*Boston Med. and Surg. Journal*, April 27, 1882.

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Acne Keloid.

At a meeting of the Pathological Society of London, held April 18, Mr. MORRANT BAKER said that, so far as he was aware, no case of this disease had been recorded in England. The patient, who was in attendance, was a middle-aged man, who presented in the nape of the neck a flat patch, with an indented overhanging edge, and a smooth, dark-red surface, which projected about one-eighth of an inch above the surrounding skin. A few hairs in bundles projected through

the surface of the tumour from a lower level. The skin was not especially sensitive; surrounding the patch were a number of firm tubercles, each perforated by a hair, which issued from its summit. The summit had a yellow pustule-like appearance. The larger patch was evidently formed by an aggregation of many of these tubercles. These smaller tubercles closely resembled at first sight the pustules of acne vulgaris, but were entirely different in structure; for each seemed to be composed of soft, unbroken, red-scar tissue, its summit perforated by a hair, which was rendered especially evident by the yellow quasi-pustular appearance of the epidermis which surrounded the orifice of the follicle. The patient suffered very little inconvenience. He was a butcher, aged forty-seven, who was in excellent health; he attributed the origin of the growth, which began about four years earlier, to a poisoned wound, but this was apparently a mere guess. Mr. Baker had met with one other instance only of the disease; the patient was an old gentleman, who attributed the disease to the irritation of the edge of the collar; he declined any cutting operation, but consented to cauterization with nitric acid, and the growth did not recur. Professor Kaposi, in writing on Frambœsia, referred to a disease in which bright-red, papillary, weeping, and partially ulcerating excrescences (which bled easily) existed on the scalp, and proposed to call it *Dermatitis papillomatosa Capillitii;* but Mr. Baker would not have thought of identifying his case with this disease, but that Professor Kaposi and Dr. Hans Hebra, who saw the case during the Congress, recognized it as identical with the disease described by the former. M. Verité informed him that it was identical with the disease called acne keloid by M. Bazin, and Mr. Baker preferred to make use of this term, because it expressed fairly well the naked-eye features of the growth.—*Brit. Med. Journ.*, April 22, 1882.

SURGERY.

The Value of the Details of Listerism in Abdominal Surgery.

Mr. Lawson Tait read a paper on this subject before the Surgical Society of Ireland on February 24. There were three general principles, or axioms, with a statement of which he would begin his paper: 1. In discussing the question, all empirical statements should, as far as possible, be avoided. 2. The smaller the range and the fewer the disturbing elements the better; *i. e.*, for the deciding of such questions, it was better to compare the results obtained in one series of operations, for example, ovariotomies, than to compare those of several series of major and minor surgical operations. In other words, a series of repetitions was more likely to give accurate results than mixed cases. 3. In the peritoneum was a cavity peculiarly susceptible to septic influences; the abdominal viscera were, therefore, a peculiarly good field for such an investigation. The basis of Lister's theory of putrefaction by means of bacteria, etc., had long ago been proved beyond dispute as regards dead matter. But Mr. Lister assumed for living matter the same sequence of events as in the case of dead. This had never been proved. If a wound were full of blood-clot, and this was kept antiseptic, it would become organized, and form part of the tissue it lay near, just as a blood-clot would do in the interior of the body, being, in both cases, protected from the attacks of the bacteriæ in the air. Blood-clots in the body were not truly dead, but only in a low state of vitality, insufficient, however, to preserve them from the attacks of bacteriæ. Dr. J. Hamilton, of Edinburgh, in his experiments on sponge-graft-

ing, had shown that a thoroughly dead sponge would do without Listerism what the blood-clot would do with it—viz., become organized. It would even do this in a putrescent wound, because it was sufficiently tough to resist the attacks of the bacteriæ, while the bloodvessels of the neighbourhood were working their way into, and forming a network through, its substance. In the same way, the blood-clots, being finely porous, offered support to the fine bloodvessels developed; but being too frail to resist the attacks of bacteria, became putrescent before time had occurred for the vessels to be formed, unless protected by antiseptics. Mr. Tait enunciated his opinions to the effect that, whilst accepting the germ-theory, he repudiated Mr. Lister's application of it in surgery. However, putting theory and inclination aside, he determined to give Listerism a fair trial in one hundred abdominal sections, nearly sixty of which were for ovarian tumours; and the conclusions arrived at were all against Mr. Lister's views. The most valuable information was to be obtained, not by noting the ratio of deaths, but by observing under what mode of treatment the recoveries were most easy, even, rapid, and uncomplicated. For this purpose he exhibited comprehensive charts of a large number of cases treated by various methods, showing temperature, pulse, duration, etc., of the cases in each group. Those treated by complete Listerism gave the worst results. He, therefore, wished to try if this result was due to the method or to the carbolic acid used. He divided the investigation into three groups: (1) the use of the spray; (2) the preparation of the sponges; and (3) the details during the operation. In group 1, the spray was used regularly, beginning with the carbolic acid solution, 1 in 20; then reduced to 1 in 30, then to 1 in 50, 1 in 100, 1 in 1000, and finally a spray of pure water was used. The recoveries improved in each as the carbolic acid was reduced in strength. In group 2, the sponges were treated with solutions of the acid gradually reduced in strength, as in group 1, with similar results; so also group 3. The investigation lasted over two years. He, therefore, gave up the use of carbolic acid altogether; but still keeps his instruments, ligatures, sponges, etc., in a bath of pure water—not to avoid bacteria, but to keep them wet. Bacteria, which produced putrefaction in dead matter, he considered harmless in the living peritoneum. Lister's plan had done an infinity of good, but his theories of its action had been proved to be untenable.—*British Medical Journal*, April 15, 1882.

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Sulphide of Calcium as an Antisuppurative.

Dr. ANDREW H. SMITH, Chairman of the Committee on Restoratives of the Therapeutical Society of New York, furnishes to the *New York Medical Journal and Obstetrical Review* for June, 1882, a report of the committee on the use of sulphide of calcium for the purpose of preventing or diminishing suppuration. After giving the experience of several members of the society, Dr. Smith concludes his report as follows: Judging from this limited number of cases, it would seem that we are warranted in concluding that in many cases of suppurative affections, ranging from the small pustules of acne to extensive suppurating surfaces, an appreciable, and often a very marked, benefit is derived from the use of the calcium sulphide, suppuration which would otherwise take place being averted, or the quantity and duration of an existing discharge being lessened. At the same time its action is not uniform; and in many apparently favourable cases it will fail entirely. The drug is somewhat prone to irritate the stomach, and this circumstance affords an indication for small doses frequently repeated, instead of larger ones at longer intervals. One-tenth of a grain every two hours in acute cases will generally secure the full therapeutical action of the drug, but larger doses may sometimes be required, and some patients will bear well a grain

three or four times a day. Even in small doses the sulphide will occasionally produce headache, and the patient is usually more or less annoyed by eructation of sulphuretted hydrogen.

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A Method of Removing Benign Tumours of the Breast without Mutilation.

Prof. T. Gaillard Thomas, Surgeon to the New York State Woman's Hospital, contributes to the April number of the *New York Medical Journal and Obstetrical Review* a paper in which he expresses himself in favour of removing benign tumours of the breast as a rule, because the mere presence of a tumour in the breast usually renders the patient apprehensive, nervous, and often gloomy, while with our present improved methods of operating, the patient is exposed to slight risks, the danger of growth of the tumour is removed, and with this disappears at the same time that of the subsequent degeneration of a benign into a malignant growth. If, in addition to these advantages, we can add the avoidance of all mutilation to the person, we have strong grounds for departing from the practice of non-interference. The method of operation described Dr. Thomas has practised thus far in a dozen cases. He distinctly states that it is entirely inappropriate for tumours of malignant character, and that it is applicable neither to very large nor to very small benign growths, being insufficient for the former and unnecessarily radical in its character for the latter. The growths for the removal of which he has resorted to it have been fibromata, lipomata, cysts, and adenomata, and have varied in size from that of a hen's egg to that of a duck's egg or a little larger. The operation is thus performed: The patient standing erect and the mamma being completely exposed, a semicircular line is drawn with pen and ink exactly in the fold which is created by the fall of the organ upon the thorax. This line encircles the lower half of the breast at its junction with the trunk. As soon as it has dried the patient is anæsthetized, and with the bistoury the skin and areolar tissue are cut through, the knife exactly following the ink-line until the thoracic muscles are reached. From these the mamma is now dissected away until the line of dissection represents the chord of an arc extending from extremity to extremity of the semicircular incision. The lower half of the mamma which is now dissected off is, after ligation of all bleeding vessels, turned upward by an assistant and laid upon the chest-walls just below the clavicle. An incision is then made upon the tumour from underneath by the bistoury, a pair of short vulsella forceps is firmly fixed into it, and, while traction is made with it, its connections are snipped with scissors, the body of the tumour being closely adhered to in this process, and the growth is removed. All hemorrhage is then checked, and the breast is put back into its original position. Its outer or cutaneous surface is entirely uninjured, and the only alteration consists in a cavity at the former situation of the tumour. A glass tube with small holes at its upper extremity and along its sides, about three inches in length and of about the size of a No. 10 urethral sound, is then passed into this cavity between the lips of the incision, and its lower extremity is fixed to the thoracic walls by India-rubber adhesive plaster, and the line of incision is closed with interrupted suture. In doing this, to avoid cicatrices as much as possible very small round sewing-needles are employed; these are inserted as near as possible to the edges of the incision, and carry the finest Chinese silk. After enough of them have been employed to bring the lips of the wound into accurate contact, the line of incision is covered with gutta-percha and collodion, and the ordinary antiseptic dressing is applied. If the glass drainage-tube acts perfectly, there is no offensive odour to the discharge, and the temperature does not rise above 100°: the tube is in no way interfered with until the ninth day, when the stitches are removed. If, on

the other hand, the tube does not appear to perform its function satisfactorily, it is manipulated so as to cause it to drain all parts of the cavity, and warm carbolized water is freely injected through it every eight hours. On the ninth day, when the stitches are removed, the tube is removed likewise.

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Diagnosis of Injuries of the Abdomen.

In a communication by Dr. BECK on cases of injury to the intestines, liver, and bladder (*Deutsche Zeitsch. für Chir.*, Band xv.; *Med.-Chir. Runds.*, 1882, p. 112), it is stated that a prompt and decided diagnosis as to rupture of an internal organ in cases of a blow on the abdomen is attended with extreme difficulty, since there is not any one characteristic symptom of such lesion, and it is only through careful observation and study of all the symptoms that a correct conclusion can be attained. Of the general symptoms, a high degree of shock, which condition is rarely absent in cases of severe abdominal concussion, indicates laceration of an internal organ. Intense and persistent collapse, associated with a thready and very rapid pulse, and shallow and quick breathing, will remove any doubt as to the occurrence of internal bleeding. Whilst with simple abdominal contusion, febrile phenomena are seldom observed, a high and increasing temperature, together with increase of the pulse and respiratory movements, would indicate peritonitis from effusion of intestinal contents. Of the local symptoms, the most important is that of pain, which is localized, spontaneous, and but slightly affected by pressure. This pain steadily increases in severity until the stage of intestinal paralysis, when it ceases. In cases of contusion, on the other hand, the pain is not so acute; it is increased by pressure, varies in intensity at different times, and often ceases suddenly. The physical abdominal symptoms, as swelling, distension, resistance, and the changes in percussion-sounds, have not, Dr. Beck holds, the diagnostic value that have been claimed for them by Dr. Moritz (*St. Petersburger Med. Woch.*, 1879). Sudden tympanites, with a clear sound over the hepatic region, is not likely, in Dr. Beck's opinion, to occur with rupture of the intestine, unless this rupture be very extensive. In ordinary cases, the intestinal gas escapes into the abdominal cavity so gradually, and in such small quantities, that it could not give rise to any sudden and marked external signs. On the other hand, in some cases of abdominal contusion without rupture of intestine, Dr. Beck has made out a clear percussion-sound over the region of the liver, this condition having been due to paralysis of a small portion of intestine, and to accumulation above this paralyzed portion of a considerable quantity of gas.

The later local symptoms observed in cases of intestinal rupture are usually but the results of the peritonitis due to escape of poisonous gas. Immobility of the patient and dread of being disturbed are not, it is stated by Dr. Beck, characteristic symptoms of ruptured intestine. In almost every case of abdominal injury, the patient at first remains at absolute rest; but, in advanced stages, in cases of rupture, and after peritonitis has spread extensively, the patient, suffering from pain and the distension of tympanites, endeavours to allay his intolerable condition by frequent changes of position. Much importance is to be attributed to vomiting, which, in cases of slight abdominal injury, soon ceases after the disappearance of the symptoms of shock. In cases, on the other hand, of communication between the intestinal canal and the peritoneal sac, vomiting steadily increases, and the patient is much troubled by frequent and profuse ejections of bilious fluid. Retention of urine and difficulty of micturition are to be regarded as symptoms of some value. Neither of these is likely to be observed in cases of slight abdominal injury; but the use of the catheter is often required when peri-

tonitis has resulted from rupture of the intestine, or of some other internal organ. The following conditions indicate with certainty the occurrence of rupture of the bladder: intense pain in the region of the bladder, anuria, signs of the presence of free fluid in the peritoneal sac, swelling and distension of the abdomen, purulent peritonitis, which, however, does not run so rapid a course as that due to rupture of intestine, pelvic infiltration, and a small quantity of urine in the bladder, and this mixed with fluid or coagulated blood. The extent and severity of this collection of symptoms vary in different cases, according to the seat of the vesical rupture.

In discussing the treatment of abdominal injury from direct violence, particularly from a kick, Dr. Beck points out that it is advisable, in cases of doubt, to take the most unfavourable view of the case, and to treat the patient in accordance with such view, by insisting on absolute rest, by applying leeches and cold compresses to the abdomen, and by administering opium internally, or, when there is obstinate vomiting, by giving subcutaneous injections of morphia. The patient should occasionally suck small lumps of ice, and be restricted to cold and fluid nourishment. By no means should any clyster be administered, lest, by such treatment, active movements of the injured intestine be excited.

It has been proved, on *post-mortem* examination, that, under such treatment as this, sealing together of the margins of the intestinal rent by fibrinous exudation and even firm occlusion may result; but, in such cases, when but even a very small quantity of intestinal contents has been effused, this treatment rarely results in cure. Operative interference, in cases of intestinal rupture, ought, in Dr. Beck's opinion, not to be considered; as in many of these cases the rupture is inaccessible through its deep situation, and through the gluing together of the intestinal loops by the products of recent peritonitis.—*London Medical Record*, April 15, 1882.

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The Elastic Ligature in Abdominal Surgery.

A recent number of the *Berliner Klinische Wochenschrift* contains an interesting communication on the intra-peritoneal treatment of the pedicle of uterine fibroids, and the removal of tumours and parts of the abdominal viscera by the elastic ligature. The paper is by Dr. Kasprzik, assistant in the Freiburg gynæcological clinic, and is based upon experiments conducted by Professor Hegar. The author believes that in the elastic ligature a means has been discovered by which not only the complete, but the partial, removal of the spleen, kidneys, omentum, even of the liver, can be accomplished without excessive risk. The extremely favourable results which Professor Hegar had obtained with the elastic ligature in the extirpation of uterine fibroids—the risk of secondary hemorrhage being by it almost completely abolished—led him to devise a series of experiments to test its behaviour in the abdomen, and its applicability to other possible requirements of abdominal surgery. The first set of experiments were performed to see what happens when a bit of India-rubber tubing is left in the abdomen. They show that it was borne exceedingly well, that it did not excite suppuration or peritonitis. In the second group of experiments, pieces of omentum, uterus, spleen, liver, and kidneys were surrounded with the elastic ligature, and the piece thus secured cut away either with knife, scissors, or the platinum blade of Paquelin's cautery. It was found that parts of the uterus, omentum, or spleen might thus be removed with safety. In the case of the omentum and uterus, India-rubber threads were sufficient; but in that of the spleen, thin solid cords were found to cut through the tissue; but when a piece of India-rubber tubing was used the results were successful. The experiments in removal of pieces of liver and kidney terminated unfavourably; but they were

few in number, and Professor Hegar hopes that, by continuing them, knowledge may be gained as to the kind of ligature, and the tension to be put on it, which may lead to success here also. In any case, he thinks, he has proved that the stump of the uterus may be treated with the elastic ligature without risk. He does not think, however, that on that account the question of the intra- or extra-peritoneal treatment of the stump is finally settled. The *technique* of the elastic ligature is very important. It is necessary to know how much stretching the India-rubber will bear, and how much will be best for the stump. The firmer the tissue of the latter, the higher will be the tension of the ligature required to arrest hemorrhage. If, on the other hand, the stump is soft and vascular, a too tightly stretched ligature will cut through it, and dangerous hemorrhage result. The ordinary method of tying does not suit the elastic ligature, because it slips before the knot can be made fast. Professor Hegar, therefore, simply crosses the ends, seizes them with a special pair of forceps, something like scissors with blunt blades, and then ties together with silk or wire the ends of the ligatures where they cross one another, between the forceps and the stump. The ends are then cut off on the other side of the forceps, and the latter removed.—*Med. Times and Gaz.*, May 6, 1882.

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Excision of the Pylorus.

The *Wiener Medizinische Blätter* of May 18th contains an account of a discussion, at a recent sitting of the Congress für Innere Medizin, on the diagnosis of carcinoma of the stomach, and on the operation of resection for that disease. Dr. HENCK, of Heidelberg, read the case of excision of the pylorus for carcinoma performed ten months ago by Professor Czerny, which was briefly described by the latter surgeon at the International Medical Congress, and is recorded in its *Transactions;* and it is satisfactory to learn that the patient, who gained eleven pounds' weight at the end of the sixth week of the operation, was, at the beginning of last month, ten months after the operation, quite well, with no symptoms of recurrence of the disease. Dr. Henck tabulated the clinical history of twelve resections of the stomach. One, which recovered, was performed in a case of stricture of the pylorus following perforating ulcer. The remaining eleven were for the removal of cancerous growths; four of these recovered from the operation; out of the recoveries, three patients are still alive, and free from any recurrence; the fourth is known to have died four months after the excision, from a return of the disease. In the discussion which followed the reading of Dr. Henck's paper, Professor Lichtheim observed that mobility of an abdominal growth detected by palpation in the region of the pylorus was no proof that, if the growth were pyloric, there were no adhesions. In a case under his care, the swelling could be freely moved about under the abdominal wall when the patient was narcotized; yet, on opening the abdominal cavity, the pylorus was so strongly adherent to neighbouring parts, that its removal was impracticable. Professor Kühle stated that the rapid implication of the chain of lymphatic glands in front of the bodies of the vertebræ behind the stomach, in cancer of that organ, renders many cases unsuitable for surgical treatment. Dr. Henck remarked that the same objection stands in the way of operation in cancer of any other organ. As early diagnosis is so important, Dr. Ewald asked if the members of the Congress could confirm the theory of Van der Velden, that free hydrochloric acid was absent in the gastric juice in cancer of the stomach; but no researches had been made towards the confirmation of this theory by those present who had some experience of operations for the radical cure of malignant gastric disease.—*British Med. Journal*, June 3, 1882.

Lumbar Colotomy for Stricture of Descending Colon.

At the meeting of the Royal Medical and Chirurgical Society of London, a paper was read upon a case of excision of a stricture of the descending colon, through an incision made for a left lumbar colotomy, with remarks, by Mr. Thomas Bryant. This was a case of stricture of the descending colon, in which he excised the diseased segment of bowel through the wound made for a left lumbar colotomy, the patient recovering. The operation was performed on a lady aged fifty, who had suffered from complete obstruction for eight weeks, and was very feeble. The stricture could not be felt from below. The bowel was removed through the oblique incision made for left lumbar colotomy, by simply pulling the strictured segment through the wound and stitching each portion of the bowel with its two orifices as divided to the lips of the wound. The stricture was of the annular kind, and involved about one inch of the bowel. It was so narrow as barely to admit the passage of a No. 8 catheter. The preparation was exhibited with microscopical appearances of the growth in section as made by Dr. Goodhart. Mr. Bryant said he believed the operation he had performed was a new one, and that it was applicable to not a few of the cases of stricture of the descending colon. It had suggested itself to his mind from seeing cases of localized or annular stricture of the bowel which were free and movable, both in operations of colotomy as well as in the post-mortem room; but the case read was the first in which he had put the suggestion into practice. He pointed out how these annular strictures were generally local diseases, and, consequently, how desirable it was that they should be removed where possible. He suggested that the question of the excision of the diseased growth should be entertained as soon as the diagnosis of the case was made, and that to every case of colotomy for chronic obstruction of the descending colon the possibility of being able to remove the diseased bowel by operation should be considered before the bowel is opened for a colotomy operation. He then showed how desirable it was that the question of excision or of colotomy should not be postponed till the patient's powers were too feeble to bear either, as is now too often the case. He did not regard the operation he had performed as more serious than a colotomy in which the peritoneum was wounded.

Mr. John Marshall remarked on the interest and importance of the paper, and the distinction from other cases where portions of the bowel have been removed, and the segments reunited. Mr. Bryant's operation was less formidable, but fully as effectual in affording relief.

Mr. G. Pollock thought the case redounded very much to the author's credit. He was not aware of a similar case, and believed it to be the first in British surgery. Two or three years ago he (Mr. Pollock) considered this operation should be performed, and discussed it with his colleagues. In a case in which he had performed left colotomy he got below the stricture, which could be felt above, but it was too bound down by adhesions for removal. A right colotomy was, therefore, done, and death ultimately took place; the long continuance of distension had produced a cracking of the peritoneal coat, a result he had often seen, and one which could be obtained experimentally. In one case of stricture of the sigmoid, one like Mr. Bryant's, the patient survived colotomy two years and ten months, when he died from fatty degeneration of the heart, and post mortem the disease was found to have very little extended, only a coil of small intestine had just become adherent to it. In this case he believed the removal of the stricture might have much prolonged life, had the cardiac conditions not been present. Mr. Pollock was sure that he had seen cases in which this operation might have been performed.

Mr. CRIPPS had often thought of the same thing before, and so far as he knew, Mr. Bryant was the first to do it in this country, although last year it had been done in Germany, and Billroth acted on the same principle in excising pyloric stricture. All these strictures commence as a deposit of adenoid growth in the submucous tissue. After a while ulceration and cell proliferation occur, and a constriction takes place, and the disposition of the muscular fibres determines the annular form of the stricture. The malignancy of the disease lay not so much in the growth itself as in the locality attacked, and if removed there may be no recurrence. He suggested that in sigmoid strictures an incision should be made external to the rectus muscle, so as to expose the diseased part more fully than is possible in the confined space in the loin. In either case the peritoneum would have to be opened. The objection to reuniting the divided bowel would be the risk of fecal extravasation.

Mr. H. MARSH mentioned the case of a woman fifty-four years of age suddenly seized with symptoms of acute intestinal obstruction, so that the diagnosis of a constricting band was made. The abdomen was carefully opened in the middle line, when the cause was found to be an annular stricture in the upper part of the sigmoid. The uncertainty of being able to remove the disease by lumbar incision is very great, and, therefore, knowing how limited the diseased condition in these cases is, the better course would be to open the abdomen, as Mr. Cripps had mentioned, which would probably give more successful results than Mr. Bryant's plan. He followed Mr. Pollock in urging early operations, for if the intestine be allowed to get over-distended the operation was certain to fail.

Mr. H. MORRIS quite agreed with Mr. Marsh and Mr. Cripps, that if the operation is to be introduced for all forms of stricture abdominal section was preferable, but in such cases as Mr. Bryant's the colotomy incision was better, for it requires only one incision into the peritoneum, and the distended bowel adds greatly to the risk of fecal extravasation. In a case in which he removed a large part of bowel for intussusception, he was obliged to stitch the two ends together on one aspect, and to make an artificial anus in the front of the abdominal wall.

Mr. BRYANT, in reply, said that he felt it best to adhere to the lumbar incision, the oblique one he published admitting of more space than the ordinary colotomy wound. Thus at least four or five inches of the descending colon can be dealt with in the dead subject, and more than that in the living. It must also be borne in mind that nine-tenths of the strictures are in the descending colon and the rectum; and of the former the majority involve the sigmoid and splenic flexures. If the part is movable, it can be excised; the operation is not possible when there are adhesions, and that would be an objection to opening the abdomen in front. The question should be excision, if practicable; colotomy where excision is not feasible.—*Lancet*, April 1, 1882.

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Splenectomy.

Mr. WARRINGTON HAWARD read notes of a case of splenectomy at the meeting of the Clinical Society of London held March 24. The patient, a woman, aged forty-nine, had usually enjoyed good health. Had never suffered from ague or any intermittent fever. The catamenia had ceased three years. She had been seven years married, but had no children. For eighteen months she had suffered pain in the left side of the abdomen, and for ten months had been aware of an abdominal tumour, which had been steadily increasing in size, and which distressed her by its weight. When admitted into St. George's Hospital, she was a rather stout woman, of good complexion. She did not look at all anæmic,

and although the number of the white globules of the blood was increased, she showed no other sign of leucocythæmia, excepting a greatly enlarged spleen. The spleen occupied the greater part of the left side of the abdomen, and extended from the loin to three inches beyond the middle line, and from the ribs to the groin. The tumour was firm, well defined, and moderately movable. It produced great discomfort from its weight, and a dragging sensation whenever she moved about. There was no other glandular enlargement, and the rest of the viscera were healthy. She had no palpitation or dyspnœa, nor had she suffered any hemorrhage. Her temperature, pulse, and respiration were natural. The urine was natural. It having been decided to remove the spleen, Mr. Haward performed abdominal section for the purpose. An incision was made in the middle line of the abdominal wall, extending from two inches below the ensiform cartilage to within two inches of the pubes. The enlarged spleen at once presented, and was found free from adhesions. In endeavouring to tilt up the lower end of the tumour, a rent occurred at its upper margin, from which free hemorrhage took place for a moment, but the bleeding was speedily arrested by the pressure of a sponge upon the torn part. The vessels at the pelvis, which were enormously enlarged, were then clamped and ligatured, after which those of the gastro-splenic omentum were secured by passing an aneurism-needle threaded with silk through the membrane, and tying it in several separate portions. The connections of the spleen were then severed, and the organ delivered without further difficulty. Carbolized silk was used for the ligatures, and the only hemorrhage of any consequence was that which occurred from the rent in the spleen. While the wound was being closed, the patient suddenly became profoundly collapsed, but was revived by artificial respiration and the subcutaneous injection of ether. Five hours after the operation vomiting commenced, and, persisting with great frequency, rapidly exhausted the patient, who died in the evening of the day of operation. The spleen, both to the naked eye and microscope, presented the appearance of simple hypertrophy. Post-mortem, no disease of any organ other than the spleen could be discovered. There had been no hemorrhage after the closing of the wound, but the abdomen contained some thin blood-tinged fluid. With the exception of slight ecchymosis in the immediate neighbourhood of the wound, the peritoneum and abdominal viscera showed no sign of injury. The indications for and against the operation were considered, and it was shown that, although there was an increase in the white corpuscles of the blood, the patient exhibited none of the other signs of leucocythæmia excepting the large spleen; that there was no sign of anæmia nor tendency to hemorrhage; and that the condition of the blood would not have been suspected excepting on microscopical examination. The woman's suffering seemed entirely due to the dragging weight of the tumour, and there was no sign of any other visceral disease. The fatal result was certainly not caused by hemorrhage, which is the chief danger in cases of leucocythæmia, but seemed to be due rather to the disturbance of the great sympathetic plexuses, and the consequent shock and vomiting. The paper concluded with some remarks upon the method of the operation.

Dr. Stephen Mackenzie was glad of the opportunity of raising the question whether removal of the spleen in leucocythæmia was justifiable. Recently a patient had been sent to him with a greatly enlarged spleen, and the blood was found to contain a great excess of colourless corpuscles. He informed the friends of the patient that, though ordinary methods of treatment might afford palliation and delay the progress of the disease, an unfavourable issue was inevitable. At the same time he mentioned that, in a few cases, the enlarged spleen had been removed, and the patient recovered; further, that the operation was a

very serious one, often fatal, and that very rapidly. After due deliberation, both the patient and his family desired that the operation should be performed. He (Dr. Mackenzie) asked his colleague Mr. Reeves if, in these circumstances, he was willing to operate; and Mr. Reeves expressed his readiness to do so. The patient was admitted into the London Hospital for the purpose. He was then found to have a little œdema of the feet, and it was decided to defer the operation until attempts had been made to improve his condition. At this time the proportion of colourless to coloured corpuscles was about one to seven, the coloured corpuscles being about 65 per cent. He was kept in bed, and dialyzed iron was given. Under this treatment the blood-state improved, so that the proportion of colourless to coloured corpuscles fell to one to eighteen or nineteen, and the coloured corpuscles rose to over 70 per cent. Meanwhile Mr. Collier's tables, giving the results of the whole of the recorded cases in which the spleen had been removed, appeared—showing that, though the spleen had been excised successfully in several cases, in no case had the operation succeeded when it had been performed for leucocythæmia. On conferring with Mr. Reeves, it was felt right to inform the patient that, since the operation had been mentioned, the subject had been carefully investigated, and it was found that no case of exactly the same nature as his had recovered; and that, in these circumstances, it was felt right to advise him not to undergo it. The patient and his father, however, made up their minds that, in spite of this information, they wished the operation performed, seeing that, if it were not done, death would only be delayed. He (Dr. Mackenzie) noticed on this occasion, however, that the œdema of the feet, which had disappeared, had returned, and that there was a slight puffiness of one hand; and that, though the blood-state had improved, the patient's general condition was not so satisfactory, and leukæmic retinitis and retinal hemorrhage had made their appearance. In these circumstances, he strongly advised Mr. Reeves not to accede to the patient's request, believing that the operation would be rapidly fatal. As regarded theoretical considerations, it must be admitted that to a certain degree the operation was an experimental one, and the very unfavourable results hitherto obtained did not offer any encouragement. But if, as was asserted, the disease took its origin from malarial affection, there were grounds for believing the spleen was primarily at fault, and removal of the organ might be expected to benefit the patient, provided it could be safely performed. It therefore seemed to him desirable to raise the point whether the operation was justifiable when the blood-disease was not too advanced, in young subjects.

Mr. CLEMENT LUCAS said the terrible mortality which followed excision of the spleen in leucocythæmia—a mortality which left no case of recovery—ought not to discourage surgeons from attempts to relieve a fatal disease, but rather to direct their attention to less serious operations than excision, which might possibly effect a cure. If the disease were a simple hypertrophy, would not ligature of the splenic artery reduce the size of that organ and bring about relief? Ligature of the main artery in cases of Barbadoes leg was followed by great reduction in the size of the limb, and a similar operation for the spleen held out hopes of cure. The operation might be difficult, but, with a free incision, ought not to be impracticable, and could scarcely be so serious as that for the removal of the whole organ.

Mr. REEVES now had a case in which the operation had been seriously contemplated, but as Dr. S. Mackenzie had given such a good account of it, there was no need for him to say anything on that head. His reasons for desiring to operate were the youth of the patient, the fact that the disease was not far advanced, and the physical vigour, as well as the determined mental condition of

the patient, and his friends, who—after every risk was plainly put before them—decided to have the operation done. Mr. Reeves had looked up twenty-one cases of splenectomy, and found that about a quarter had recovered. But, very shortly after, Mr. Collier's paper appeared, pointing out that all the leucocythæmic cases which had been operated on had died. This, of course, made him hesitate; but on analyzing the table he found that most of the cases were much older than his patient, and were in a more advanced stage of the disease, so that he was still inclined to give his patient the forlorn hope offered by operation; but on consultation again with Dr. S. Mackenzie it was decided that, although the blood-condition had much improved, still, on the whole, operation must not now be thought of. He thought that, if patients were seen in an earlier stage, the operation would have a much better chance, but at present our knowledge was very imperfect, and, seeing that leucocythæmia was so common among some of the lower animals, it was highly desirable that observations and experiments on them should be made, with a view of ascertaining if removal of the diseased spleen was followed by permanent benefit. He had thought of tying the splenic artery, but shrank from it, because he feared that the spleen might necrose and necessitate its removal, thus adding a second severe operation to one which would, no doubt, be difficult, and, under the circumstances, very hazardous. It was most desirable, by selecting proper cases, to ascertain if surgery could be of use, where medicine had, unfortunately, been hitherto invariably unsuccessful. Malaria was said to be a frequent cause of the disease, and without denying this, he would ask, was it a common cause, or a cause at all, in the lower animals? Dr. Eadie, of Pimlico, had recently consulted him in reference to a case of a strong, well-built gentleman, aged twenty-two, who had never been exposed to malarial influences, whose circumstances had been always unusually good, and who had never had syphilis. At one time this patient was extremely weak, and looked very like dying, but lately he had much improved in blood-condition and general strength. His spleen was about three and a half times its normal size. This case was quoted as showing that something other than malaria, insufficient food, hygienic surroundings, and syphilis was at work in this instance.

Dr. Goodhart said that Mr. Warrington Haward had asked the question—a very important one—whether a mere excess of colourless corpuscles in the blood was of itself sufficient so to interfere with the coagulability of the blood as to condemn an operation. Dr. Goodhart thought that that question was capable of answer by the experience of the post-mortem room. This, now, in his experience, amounted to five or six cases, and in all it had been the same, that the coagula in the heart and great vessels were peculiarly flimsy, and in general appearance more like pus than blood. Of course it might be said that this was hardly an argument, seeing that by the time a case arrived at a fatal issue it had probably overstepped the distinction drawn by Mr. Haward between early and late leucocythæmia. But that was not the case. So far as the blood was concerned, cases were fatal with a far less proportion of white and red corpuscles than one in six. This proportion exists in Mr. Haward's case, and therefore, so far as the blood was concerned, he thought it might always be said of it that it was in a similar condition to that found in fatal cases. Looking, also, as he did, upon the existence of leucocythæmia as a late symptom, he doubted whether any case of leucocythæmia could, with propriety, be called early. But there was also another point to be considered, and that was the effect of an operation and the resulting pyrexia upon the condition of such blood as existed in these cases. He thought he had observed that they bore fever badly, and that the blood had a tendency to be more pus-like under such circumstances. Now that antiseptic treatment had reduced in great measure the risk of fever, such an argument had

less weight. Not if there was any truth in it—it should not be altogether overlooked in considering the risks of the operation—as it carried them beyond the mere operation itself into the larger stages of convalescence.

Dr. MARCET related particulars of the case of a dog from which the spleen had been removed about thirty years ago; the animal had subsequently lived many months, without apparently being in the least degree altered by the operation. It had then died from another cause altogether.

Mr. LISTER thought it most unfortunate that Mr. Haward's case had been fatal. Death had apparently resulted from the shock, although ether, not chloroform, had been given. The case was discouraging, as it was one favourable for the operation, and no hemorrhage had followed. Ligature of the splenic artery would be a dangerous proceeding. Experiments should perhaps be performed on the lower animals, to see if the spleen could live after ligature of its main artery, and if animals afflicted with leucocythæmia were cured by the removal of the spleen.

Mr. HAWARD said it was not at first suspected that the patient had leucocythæmia, although she had a large spleen. It was true that, in Mr. Collier's tables, the mortality after splenectomy in leucocythæmia was very great; but in this case there was no evidence of blood-change in the direction of leucocythæmia beyond that given by the microscope. The cause of death was not due to hemorrhage. The spleen was easily torn; and, at the rent which occurred in its substance during the operation, the hemorrhage was quite momentary, and no great amount of blood was lost. There was no oozing from the abdominal wall, and no difficulty in arresting the hemorrhage. Ligature of the splenic artery would be a very difficult operation if the spleen were much enlarged. Perhaps in future operations a clamp might be placed around the vessels, the spleen removed, and the vessels subsequently tied. The spleen had been removed in many cases, and the patients had recovered; so that the spleen did not appear to be a very essential part of the human economy. But, if there were an early stage of leucocythæmia, it came to be a question whether the operation should be attempted. Dr. Goodhart's remark as to the feeble clotting power of the blood after death from leucocythæmia should be remembered.—*Med. Times and Gazette*, April 8, 1882.

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Nephrectomy for Scrofulous Kidney.

At the meeting of the Clinical Society of London, held March 24th, Dr. GOODHART and Mr. GOLDING-BIRD read joint notes of this case, which was that of a young man who had suffered from symptoms of renal affection for fifteen months prior to his first coming under observation. His emaciated state and general cachectic condition, combined with the pyuria and right lumbar pain from which he suffered, pointed at once to a scrofulous pyelitis on the right side. All the other viscera were healthy. Combined abdominal and lumbar palpation, on the right side, proved the presence of an elastic tumour at the site of the kidney that was tender, and was found, on watching, to vary in size inversely as the bulk of the pus passed in the urine. After due consideration, it was agreed upon by the authors that active steps should be taken to afford relief: these reasons being founded upon the almost universal tendency of these cases rapidly to end fatally; the proved inefficiency of medicines to arrest the progress of the disease; the fact that the disease was at first at least local; and that it was only later on that other organs became infected and diseased. It was further agreed that, in the patient's present condition, anything palliative, even in the way of tapping the swelling, would be but loss of time, and making demands on his strength to no purpose. Nephrectomy was therefore decided upon and performed; the whole of the kidney

was removed, after tapping it, through the wound, in order first to diminish its bulk. It weighed ten ounces, and was a characteristic specimen of scrofulous kidney. Soon after the operation, extreme collapse supervened, from which the patient never rallied. At the inspection, the right urinary organs and the bladder were the only parts diseased; the latter, however, not irrecoverably so. While the gravity of the operation alone might account for the death, yet it was noticed that the pulse did not fail during the operation, neither on the necessary manipulation of the suprarenal bodies, nor at ligature of the pedicle. The collapse supervened at once on returning the patient to bed; and the possibility of the carbolic acid of the spray being absorbed by so large a raw surface, and in such close proximity to the large lymphatic sac (or peritoneal cavity), was suggested in explanation of the fatal ending to the case.

Mr. Clement Lucas considered that the operation, at which he was present, had been most carefully performed, and he thought the incision was the best for the case. He alluded to a case in which he had opened the kidney six years before the performance of nephrectomy, and there had been a discharge from the loin for all those years. He thought the ureter should be first tied, and cut through, and then the vessels could be the more easily ligatured. There had been a subcutaneous injection of morphia after the operation, which he thought might possibly have added to the patient's collapse. After operations for hernia, where morphia had been injected, he had seen two cases of collapse and death; so that he never now gave a morphia suppository after such operations until the patient had quite recovered from the chloroform. In his case of successful nephrectomy, the man was now well, and his wife had borne a child since the operation. Pus had continued to be passed in the urine for months after the operation, and had then gradually disappeared.

Mr. Godlee said the pleura went down to, and even below the last rib; so that he considered the removal of a part of that bone a very serious operation. He presumed the tuberculous mass in the prostate might have been previously felt. It seemed to him that the operation was defective, inasmuch as it contemplated the removal of only a portion of a wide-spread tubercular disease.

Mr. Morrant Baker said that in a case of the kind under his care he had at first opened down to the kidney only, hoping the organ would dwindle; but it did not diminish after several weeks' waiting, and the subsequent operation was only rendered the more difficult, as the tissues around the kidney had meanwhile become much matted together. The first operation seemed, in fact, to have been useless. He had since seen the child, as she was ill. She was feverish, and had afterwards died; but the wound in the loin had quite healed some months before. The urine passed a few days before death had not been distinguishable from healthy urine. Perhaps, if she had had two kidneys, to remove effectually the products of the feverish attack, she might have also recovered from the illness which proved fatal. He desired to ask the President his opinion as to whether the exposure of such a large surface for nearly two hours to the carbolic spray added to the danger of a fatal collapse.

Mr. T. Smith said he had never seen a case in which, if one kidney were tuberculously diseased, the other kidney and other parts of the urinary tract were free from disease. At any rate, after nephrectomy for tuberculous kidney, a portion of ureter similarly diseased would be left.

Mr. Knowsley Thornton had had a tolerably large experience in operations on the kidney; he had performed lumbar nephrotomy three times, and abdominal nephrectomy three times, and all the patients had recovered. He was thus in a position to speak from experience as to each method, and he had no hesitation in giving the preference to the abdominal section, by incision outside the rectus

abdominis, instead of in the median line. This was advocated by Langenbeck, of Berlin, at the Congress, and Mr. Thornton had found it most satisfactory. There was even less hemorrhage from the parietes than in the median incision; there was little or no exposure of the general peritoneal cavity, the renal vessels could be reached and ligatured before the kidney was enucleated, and much hemorrhage thus saved; and there was much less hemorrhage in enucleating through the outer layer of the meso-colon, than through the inner layer, where most of the vessels lay. He had twice operated by this incision during the last few weeks, and both patients had recovered with but little fever; indeed, convalescence was almost as rapid as after an ordinary ovariotomy. He had brought out the end of the ureter in each case, and fixed it in the wound; and this he regarded as important in avoiding sepsis. He had in one of the cases previously performed lumbar nephrotomy, hoping to cure by free drainage, but the only result was to increase the difficulty of the after nephrectomy, as in Mr. Morrant Baker's case; and he could not at all agree with Dr. Goodhart as to the advisability of making nephrotomy an introduction to nephrectomy. He had, however, found it possible to destroy the existing sepsis by the free use of tincture of iodine. In his last case the kidney weighed four pounds seven ounces, and contained twenty pints of pus, and it would have been quite impossible to perform the operation through the loin. From a careful consideration of the published cases, and from his own experience, he would strongly advocate Langenbeck's incision *in all cases*, and he believed that, with experience and care, the operation, though performed through two layers of peritoneum, might be made practically an extraperitoneal procedure, the peritoneum being closed immediately the opening for enucleation being obtained. In reply to Mr. Morrant Baker, he might mention that he had had several cases of abdominal operative surgery, under the carbolic spray, lasting two, or nearly three hours, and that he considered the chance of danger from the spray was very little indeed.

Dr. BARLOW said that, in a case operated on by Mr. Couper, the patient, a girl, was in good health several months after the operation. In her case the pyelitis, as in many other instances known to him, had been located in one kidney only.

Mr. BARKER said that, as to the removal of the last rib, in one case where the end of the rib was resected, the patient became cyanosed, with all the symptoms of a collapsed lung, and had died. In another case, operated upon by himself, he had unintentionally removed the end of the last rib in cutting down upon the kidney; no ill result had followed.

Mr. REEVES said that, although he had never had occasion to do nephrectomy, he had cut down on the kidney for exploratory purposes, and had seen nephrotomy and excision of the organ in three or four instances. The incision adopted was the usual oblique one as for lumbar colotomy, but nearer the rib. If more room were needed, this incision might be increased, or one at an angle to it added. He thought that intraperiosteal excision of a portion of the last rib was justifiable in cases where the organ could not be extracted without it, but he quoted a case in which a large kidney was removed by pulling up the last rib, and thus getting an inch to an inch and a half more room. This mobility of the last rib should be utilized as much as possible before proceeding to the somewhat severe measure of excising a part of it. There were some cases of cystic kidney, which could not be removed by the lumbar or extraperitoneal method; and he had recently assisted at such a case, which, before and during the operation, had closely simulated an ovarian tumour, so as to deceive experienced ovariotomists. Had it been attempted to remove this through the loin, the operation would either have failed, or only been concluded with serious and unsurgical damage to the peritoneum.

He, therefore, thought that large cystic kidneys should be removed by the intra-peritoneal method, although two layers of peritoneum were incised, as nowadays there was little risk in properly selected abdominal operations.

Mr. LISTER said he was pleased to hear that the means adopted by Mr. Thornton to render the wounds aseptic by the free use of tincture of iodine were efficacious. He had recently seen a lady, aged 24, sinking, with pus in the urine, in whom it was doubtful as to whether there was a calculous or scrofulous kidney. Under chloroform, the kidney was felt to be large. Upon puncture of the organ, pus escaped; no calculi were discovered. The wound in the kidney-substance was enlarged, and cavities were detected, from which four or five ounces of pus escaped. Two large drainage tubes were introduced; the wound was sewed up, and covered with eucalyptus gauze. It might be asked why was this done? Because, in some such cases, after the letting out of such offensive pus, the next day only a serous oozing would occur, although bacteria might have been present when the pus was first discharged. Antiseptic treatment answered its purpose completely in such cases. That patient was now recovering; the discharge was lessening, and the wound was healed. Even if the kidney had proved to be tuberculous, and had had eventually to be removed, his patient could not at that time have survived the major operation of nephrectomy. He had never known the carbolic spray injure the patient, although used during a long abdominal operation.

Dr. GOODHART said that, as to the question of the removal of a part only of the disease, he believed the disease commenced in one kidney, then went to the bladder, and up the other ureter to the other kidney, which, after a year or two, became diseased. He did not think that it was an argument against the operation that the suppuration in the urine lasted afterwards, for it very soon diminished, and then ceased entirely.

Mr. GOLDING-BIRD said the patient was collapsed before he was put to bed, and did not die from the morphia, as he had quite roused. Neither did he think the pleura could have been hurt in any way. He thought each case must be decided on its own merits, so far as the question of nephrotomy or nephrectomy was concerned.—*British Medical Journal*, April 8, 1882.

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Unsuccessful Nephrectomy for Calculous Pyelitis.

Dr. BARLOW and Mr. GODLEE read notes of this case at the meeting of the Clinical Society of London, held April 14th. The patient was a laundress, aged 57, of somewhat intemperate habits, who came under Dr. Barlow's care in June, 1881. Her family history presented no feature of interest; and though she recollected, on being carefully questioned, that she had passed a small calculus twenty-six years previously, she maintained that the present illness dated only from three months previously. She suffered now a considerable amount of pain, which prevented her from moving about, and had at one time a good deal of œdema—of the right leg especially—which subsequently disappeared. The urine contained a large quantity of pus; it was in fair amount, but not much more than about two-thirds of the normal quantity of urea was secreted in the twenty-four hours. The kidney was easily felt, forming a large tumour in the hypochondriac region. The woman was somewhat anæmic, and had a slight cardiac murmur, but was otherwise in good health. The amount of pain, and the quantity of pus in the urine, seemed to justify the authors in suggesting the operation to the patient—though not on pressing it—notwithstanding her comparatively advanced age; and, after due consideration, she consented to its performance. The existence of calculus had been previously ascertained by puncturing the kidney with

the needle of an aspirator. The operation was performed, with all antiseptic precautions, by Mr. Godlee on July 14th, that chosen being the abdominal section. It presented great difficulty from the density of the structures round the kidney, but was satisfactorily accomplished, the patient at the time suffering remarkably little from shock. A morphia suppository was at once administered, and some tincture of opium was given by the bowel later in the day. The patient appeared to be progressing favourably for the first twelve hours, and then passed into a quiet sleep. When aroused next morning it was found that the temperature was high; that little or no urine was being secreted; that the respirations were becoming very hollow; and that the patient was in a state of semi-consciousness. From this condition she did not recover, but she died about twenty-four hours after the operation. At the necropsy, the left kidney and the other viscera were found to be practically healthy. It was suggested that the amount of morphia administered had something to do with the patient's death, and that possibly the carbolic acid absorbed during the operation might have helped to this result; though, doubtless, the suppression of urine, from whatever cause it arose, was the most important factor. The parts removed, and half the kidney of the opposite side, were shown at the meeting.—*Brit. Med. Journ.*, April 22, 1882.

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Nephrectomy.

In a lecture on this subject, delivered at the Samaritan Free Hospital, on April 19th, Mr. J. KNOWSLEY THORNTON mentions a proceeding which he believes he was the first to introduce, and which he considers to be of the greatest consequence to the safety of the patient and to the aseptic performance of the operation. He refers to the fixing of the bladder end of the ureter outside the abdominal incision, so that the septic material it is certain to contain is not left deep in the recesses of the wound. He tied it as firmly as possible with strong silk, and cut it off so as to leave only just enough stump to pass a pin through and keep it from slipping into the wound. He cleaned this stump well with iodine, and packed it round with a little cotton squeezed out of tincture of iodine. By this method he has been able to avoid putrefaction in the early stages of the case, *i. e.*, until the peritoneum is well sealed. He thinks the question of drainage in these operations must be decided at the time for each individual case. Whenever there is a loin opening, as in his first case, he should certainly use it, passing an India-rubber tube right through from the abdominal incision (as he did in that case), so that the wound could be at once flushed and washed out if any septic symptoms appeared. In any case in which he felt sure of asepsis, he should not drain, as he was sure the peritoneal surfaces about the wound would rapidly remove (absorb) fluid effused, as was the case in one of his cases.

To sum up, then, he would recommend that the lumbar incision be only used for cases in which there is strong suspicion that a calculus is present, and that the operation will end in nephro-lithotomy; and he should be disposed, in any case in which he had commenced by the lumbar incision, and then found it necessary to complete the nephrectomy, to do so by Langenbuch's incision, utilizing a portion of the already made lumbar incision for drainage, and closing the remainder. He would in all other cases, such as neoplasm of kidney, hydronephrosis, pyonephrosis, and floating kidney, operate by abdominal section, making the incision along the outer border of the rectus abdominis instead of in the median line.—*Med. Times and Gaz.*, May 6, 1882.

Nephrectomy for Hemorrhagic Cyst of Left Kidney.

Dr. G. Leopold reports the following case (*Arch. f. Gynäkol.*, xix., No. 1): Mrs. A., aged thirty-three years, married ten years, one child. Six years previously noticed a swelling on the left side of the abdomen, which increased rapidly during last two years. *Status præsens.*—The abdomen is completely occupied by a tumour extending up to lower border of the ribs; flatness on percussion everywhere but on circumference of tumour where it is tympanitic; the tumour is slightly movable from left to right, not at all from below upward. Digital examination revealed a retroverted hypertrophic uterus. Diagnosis: ovarian cyst. Laparotomy was performed, exposing a fluctuating tumour as large as a man's head, from which, when it was punctured, flowed about four quarts of a thick blood-red fluid. A prolongation of the capsule extended upward and backward and to the left, and was found to be in intimate connection with the left kidney, the lower end of which terminated in the tumour like a chalice. The hilus was then drawn forward and the vessels and ureter ligated in three portions, and, to prevent slipping of the ligatures, the kidney was removed in such a manner that a triangular piece of its parenchyma was left attached to the hilus. The whole was returned to the abdominal cavity, which was accurately and completely closed. Lister dressing. No drainage. Removal of dressing and sutures on eighth day. No reaction whatever. Discharged cured at the end of third week. Observations of urinary secretion showed it to be below the normal in quantity until the fourteenth day. No other change was noticed. Microscopical examination of the kidney showed its parenchyma to be entirely healthy, except at the lower end, where it terminated abruptly in a strong connective-tissue capsule, which was continuous with that of the tumour. The source of the hemorrhage could not be discovered. In this case our means for the diagnosis of abdominal tumours proved to be quite insufficient. Spencer Wells gives the following as the most important points: Ovarian tumours are usually situated in front of the intestines, renal behind. Tumours of the left kidney are usually traversed vertically by the descending colon. A tumour of the kidney is always first found between false ribs and the ileum, grows at first in the direction of the umbilicus and thence into the hypochondrium, while ovarian tumours grow from below upward. Now these points may be very valuable where the tumours concerned are small, but are utterly unreliable in cases of large renal tumours. According to Olshausen, the latter occupy the entire abdominal cavity, so that it is impossible to trace their lateral origin. Immobility proves nothing, since large ovarian cysts are also immovable. Olshausen recommends the following: An asymmetric position of the tumour leaving a certain space on one side and the above-mentioned relation to the colon. But these also are of little value, for, as in this case, a large fluctuating tumour occupying an exactly central position, resting upon the pelvis in such a manner as to crowd the uterus backward, which could not be crowded upward, and was surrounded by intestine on all sides, all of these data perfectly justified the diagnosis of ovarian cyst, and even aspiration would have revealed little or nothing.

Since Kroner's computation, thirty-four new cases of nephrectomy have been reported; fifteen by abdominal, nineteen by lumbar incision. We have, therefore, seventy-six cases with the following results: thirty-eight by abdominal incision, twenty-two deaths, fifteen recoveries (result in one unknown); thirty-eight by lumbar incision, thirteen deaths, twenty-four recoveries (one not accounted for), so that the results from both methods are in inverse ratio to each other.—*American Journal of Obstetrics*, May, 1882.

Partial Extirpation of the Kidney for Pyelitis.

Mr. HOWARD MARSH read notes of this case at the meeting of the Clinical Society of London, held April 14th. The patient, a blacksmith, aged 35, was admitted into St. Bartholomew's Hospital in October last. He had had severe pain in the right loin for three years, and for eighteen months the urine had been ammoniacal and had deposited a light-coloured sediment. He had never observed blood. On admission he was pale, and his countenance was worn and anxious. The urine showed pus equal to a third of its bulk on standing, and also a small amount of blood; it was highly ammoniacal and very fetid. The patient complained of pain shooting down from the right kidney in the course of the ureter to the testis. There was some tenderness on pressure over the kidney, but nothing abnormal could be felt either in the groin or anteriorly. There was no stricture of the urethra, and no stone in the bladder. The patient was kept in bed, and in order to ascertain whether his symptoms depended on any bladder-disease complicating the mischief in the right kidney, the bladder was injected every morning, for ten days, with one grain of quinine dissolved in an ounce of slightly acidulated water, and subsequently with water gradually raised to a temperature of 120°. He was also put on a pure milk diet. But none of these methods improved the condition of the urine. At the end of two months, as he was still passing large quantities of fetid pus, the kidney was explored through an incision extending downwards and forwards from the last rib to the crest of the ilium. It was found greatly enlarged, sacculated, and very firmly bound down by dense inflammatory tissue. On stripping off its capsule—a matter of considerable difficulty—and puncturing its cortical substance, a large quantity of thick and strong-smelling urine escaped. As the whole kidney was evidently disorganized, an attempt was made to remove it, but it was so firmly adherent that this could not be accomplished. What had been exposed was, therefore, included in a double ligature and removed by curved scissors. No hemorrhage of any moment occurred during the operation, but the patient died in thirty hours of complete suppression of urine. On post-mortem examination, the right kidney was found converted into a number of large cysts. Three inches below its commencement, the ureter was so narrowed that its canal would only admit an ordinary probe. Above this point it was considerably dilated. These conditions seemed to have been produced by the healing of an ulcer in the ureter, perhaps of a tubercular character. The left kidney had the appearance of being fairly healthy; it weighed six ounces. The author remarked that he was induced to resort to an operation in this case—though, in consequence of the patient's general condition, he did so very unwillingly—in the hope of doing good either by extracting a stone, or by establishing free drainage, or of removing the kidney if it proved to be extensively diseased. It might be a warning for future cases that the condition of the kidney was much worse than there seemed reason to anticipate. Though it could not be felt during careful examination under ether, it was very large; it was so far destroyed that very little renal structure remained; and it was so firmly adherent that its removal was found to be impracticable. Seeing how limited was the space afforded by the incision in the loin, the author thought that experience was likely to show that the best method of removing large kidneys, or kidneys that were bound down by firm adhesions, was by abdominal section, the incision being made just external to the rectus muscle. He concluded by remarking that, though recent cases showed that the kidney might be safely explored by the lumbar incision, and though calculi of small size might be safely extracted from kidneys that were structurally healthy, further experience alone could teach in what cases the kidney might be safely removed. One point

must be carefully borne in mind—namely, the liability to suppression of urine from the opposite kidney. He thought the removal of kidney in persons over thirty years of age was, on this account, one of the most dangerous proceedings in the whole range of legitimate operative surgery.—*Brit. Med. Journ.*, April 22, 1882.

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Nephrotomy.

During the early part of March nephrotomy was successfully performed by Dr. RODDICK, of the Montreal General Hospital, upon a girl of twenty, who had for six years been suffering from frequent and painful micturition, the urine voided being small in quantity, and more or less muco-purulent and bloody. At twelve years of age the patient had an attack of so-called *spinal fever* (?), at fourteen a severe sciatica, and shortly afterwards her urinary troubles began. Most of the ordinary methods of treatment were tried without much benefit; an examination was made for calculus, with negative results; rapid dilatation of the urethra was practised, several small villosities were removed from the mucous surface of the bladder, and weak nitric acid injections employed, but without any marked or permanent relief. Meanwhile, in spite of constant and careful treatment, the urine became gradually more purulent, and the patient's general health steadily declined. Last July chills and fever set in, accompanied by vomiting, alternating constipation and diarrhœa, and pain over the right kidney with tenderness upon pressure. By October a well-defined tumour could be made out in the right hypochondrium—a hypodermic needle was inserted, but failed to reach pus. From that time her decline was rapid, and although the appetite kept uniformly good, emaciation became extreme. On admission to hospital, a distinct fluctuating tumour was found occupying the right hypochondriac and lumbar regions. The urine, which was passed every half hour, was scanty, and contained mucus and pus in abundance.

The presence of pus in the tumour having been discovered by means of the aspirator, nephrotomy was performed with strict antiseptic precautions. A transverse incision was made in the loin, midway between the border of the ribs and the crest of the ilium, and about twenty ounces of putrid, foul-smelling pus with a urinous odour came away; the sac was secured to the edges of the wound with silk sutures. A careful digital examination revealed extensive disease of the kidney structure, but no concretions. The cavity was thoroughly washed out with a carbolic solution (1 × 40), a large-sized drainage tube inserted, and antiseptic dressings applied. On the third day symptoms of carbolic acid absorption having appeared, a twenty per cent. boracic acid solution was substituted. The operation has so far proved a complete success: the chills and fever have disappeared—the urine has increased in quantity, is passed painlessly, and at longer intervals. The strength and general condition of the patient improved so rapidly after the operation, that on the sixteenth day she was able to be removed to her own home.—*Canada Med. Record*, April, 1882.

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Nephro-lithotomy on Account of Anuria.

The following interesting case (*Centralblatt für Chirurgie*, March 25) illustrates the soundness of the rule, which advises against extirpation of the kidney when the organ is otherwise healthy and a calculus is found in it. It appears probable that those causes which lead to the formation of stone in the kidney act upon both kidneys alike, and the removal of one exposes the patient to all the dangers which might result from the formation of a calculus in the other.

The patient was an unmarried lady, 27 years of age. She had suffered for ten

years with violent cramp-like pains during urination, radiating occasionally into the left side. Urine dark, of neutral or slight acid reaction. Dilatation of the urethra, with incisions into the sphincter vesicæ, was performed on the 13th of October, 1881. This was followed by cystitis and subsequently by a retro-peritoneal abscess, which latter was, by introducing the finger into the abscess cavity, found to be an abscess of the pelvis of the left kidney.

The daily rise of temperature had not taken place any more until February 8, 1882, when the thermometer registered 38.1° C. in the morning. No discharge of urine. Afternoon temperature 40.4°. Rigor. Catheterization was performed, but no urine, only mucus and a small stone being drawn. Pains in the right lumbar region radiating toward the bladder. The following diagnosis was made: complete obliteration of the left kidney by the abscess and momentary closure of the right ureter by a calculus resulting in complete anuria.

Evening temperature 38.4°. Nausea. Anuria.

Feb. 9. Morning temperature, 39.1°. Noon, 39.5°; evening, 39.4°. Constant nausea, with tendency to vomiting. Vomited gall-coloured mucus twice. Pain in the right lumbar region radiating toward the bladder; no urine; no convulsions. Uræmia began to set in, and it was determined, in order to avoid imminent death, to search for and remove the calculus.

An incision was made in the lumbar region from the end of the 11th rib to the crest of the ilium, and the muscles and deep fascia were divided until the fatty capsule of the kidney was reached. Then a second vertical incision was made from the lower end of the first, on a level with the crest of the ilium and extending backward. The capsule of the kidney was then divided, and it would have been an easy matter to remove the kidney, which could not, however, for obvious reasons, be done. In order to reach the pelvis of the kidney and the ureter, the anterior surface of the kidney was freed from the capsule, and the stone which obstructed the ureter was felt to glide back into the pelvis; at the same time urine followed from the bladder. The calculus was then removed by being again forced into the ureter and the latter cut open over it. The stone was smooth, elongated, and about the size of a pea. Four other calculi were detected in the pelvis of the kidney and extracted. The wound of the ureter was sewed by means of three silk sutures, the ends of which were left to hang out of the external wound.

10*th*. Morning, temperature 36.6°, pulse small and frequent. The dressings are saturated with urine. Noon, temperature 38.0°. No urine per vesicam but has passed through wound. Some nausea, but less than yesterday. Evening, temperature 38.5°.

11*th*. Temp., morning, 38.1°. Evening, 38.3°, a little stronger; nausea continues.

12*th*. Temp., morning, 37.6°. Evening, 38.3°. Urine escapes through wound.

13*th*. Rigor during the night 40.8°. No urine in the dressing. The sutures of the ureter are cut, as is the ureter, and the latter was fixed in the lumbar wound by means of sutures. The patient was still alive on the 12th of March, and the wound, which for some days did not look well, presented a clean appearance.

The condition, as detailed, is no doubt rare; but even in those cases in which a ureter is plugged by a calculus, even though the other kidney performed its function, and the urine from it flows into the bladder, it is advisable to perform nephro-lithotomy in order to save the other kidney.—*St. Louis Med. and Surg. Journ.*, May, 1882.

Floating Kidney.

A careful and learned study of "Floating Kidney," a subject of great general interest, has lately appeared from the pen of Dr. LEOPOLD LANDAU.[1] The frequency with which "so-called movable kidneys" are observed in the living subject, and the rarity with which they are seen in the dead-house, have induced some to question their reality; while personal experience of one or more cases in which they have led to more or less serious symptoms has lately induced others to advise their removal on small provocation. The frequency of their occurrence in women is a point which certainly requires explanation. All the bearings on this subject are dealt with in a treatise of some hundred pages.

In discussing the mechanism of the displacement, the author considers the normal fixation of the kidney, and lays much stress on the intra-abdominal relations of pressure, pointing out the interesting fact that, although the kidneys generally remain *in situ* on opening the abdomen, and raising the body upright, by means of their attachments, in some cases they become more or less dislocated, as was pointed out by Sappey. The cases in which diagnosis of a movable kidney during life has been followed by a *post-mortem* discovery of the kidneys *in situ* by no means disprove the correctness of the diagnosis, considering that the kidney, which can during life be pushed into its normal place, may sink there in the recumbent position after death, and become fixed by the setting of the fat round it. Seventeen autopsies of dislocated kidneys are given. The etiology is to be found by referring to the forces which normally fix the kidney; these are two in number: the arrangement of the attachments of the kidney and the intra-abdominal relations of pressure. Whatever disturbs either of these favours dislocation. The commonest of these predisposing causes are emaciation, abscess in the neighbourhood, and loss of firmness and elasticity in the abdominal walls. The exciting causes may be jerks or the traction of viscera (especially the colon) in a belly more or less pendulous; but we cannot follow the author in including such firm pressure as bearing down of all sorts. The connection of hydronephrosis with movable kidney is obvious, and is borne out by numerous facts; the connection of hydronephrosis with pelvic tumours, with pelvic cicatrices, and with procidentia uteri has been observed, but our author includes flexions of the non-pregnant uterus, and refers to two cases, which, he says, "convincingly prove" this. We have referred to one of these, and find ourselves less convinced than before, the case not having furnished an autopsy, and the relation of one condition to the other being based upon pure theorizing. The other we cannot find in the medical libraries of London.

Dr. Landau discusses the corset and acquits this popular scapegoat. With regard to the frequency of right-sided affection, he finds the explanation of this in the firmer attachments of the left kidney, which are considered principally in connection with those of the colon, but also of the duodenum and pancreas. The symptoms are regarded from the point of view of the nervous, vascular, digestive, and urinary systems. Under the first the increased pain in movable kidneys at the menstrual period is brought into relation with the "aching kidney" of Duncan. A remark is made, which seems to us wise and most pregnant, with regard to all alleged mutual pressures of neighbouring organs, a force constantly invoked for the explanation of pelvic symptoms, that the kidney has not *weight* but *specific gravity*, an expression to be understood, of course, not with reference to water but to the intra-abdominal pressure, and to be remembered in the case of all internal organs. The phenomena of strangulation ("Einklemmungserschei-

[1] Die Wanderniere der Frauen, von Dr. Leopold Landau. Berlin, Hirschwald, 1881.

nungen") in a floating kidney meet with the attention they deserve. The German name has not, to our knowledge, an exact English equivalent in use. The symptoms usually follow exertion or quick movement, and consist of severe pain, collapse, vomiting, high-coloured and scanty urine, sometimes containing blood, some fever, together with the rapid growth of a large dull tumour in the region of the floating kidney. The symptoms increase in from four to six days, the tumour disappearing in one or two weeks. The first sign of recovery is the plentiful secretion of urine of low specific gravity. These phenomena are referred by the author to torsion, or angular flexion of the renal vessels, especially the renal vein; and this view is illustrated by diagrams of actual experiments. The favourable termination of these cases is explained by the fact that, even if the torsion or angular flexion is not obliterated, a collateral circulation is established, even after ligature of the renal vein. This view is supported by a *post-mortem* observation by Mosler. It covers the connection between movable kidney and hydronephrosis, either temporary or permanent, a connection supported by facts. It can be easily understood how obstruction by flexion of the ureter may be relieved by the supine decubitus, especially if tension be diminished by aspiration. The author lays stress on the untrustworthiness of percussion in the diagnosis of movable kidneys, and gives cases where no difference could be detected between the two sides, even after excision of a kidney; a remark of Skoda's, that resistance rather than resonance is to be relied on in percussing the kidney, points in the same direction. The author ventures to assert that auscultation will detect a whistling murmur in cases of torsion of the vessels, a supposition which the analogy of ovarian tumour with twisted pedicle does not as yet confirm. A floating kidney not very uncommonly disappears permanently, in other words becomes fixed again. It is easily intelligible that if emaciation (especially where rapid) and relaxation of the abdominal walls can produce luxation (as happens sometimes after childbirth), rest in the supine position, together with the production of fat, may fix the kidney in its place again. The author's experience leads him to disapprove of all special contrivances for keeping the kidney in position, and to prefer a good broad bandage, but especially the much-abused "swan-bill corset!" All such contrivances, of course, can only be palliative. With regard to the proposed extirpation of uncomplicated floating kidneys, the author makes a remark whose scope is by no means limited to this affection: "The fact that a patient, immediately after extirpation of a floating kidney, feels better and suffers no inconvenience from the floating kidney is no more astonishing than that a woman no longer suffers from menorrhagia after removal of the healthy ovaries or uterus. . . . The amputation of a normal cervix uteri or the removal of healthy ovaries, perhaps the cause of dysmenorrhœa or some other slight suffering, is not to be justified; how much more unjustifiable is the extirpation of an organ so essential to life as the kidney?" In discussing the treatment of hydronephrosis the author prefers the establishment of a fistula to extirpation, on the sensible ground that, apart from the increased risk of the latter operation, the discharge from the fistula is found to become more and more urinous, proving the partial recovery of function by the remainder. Besides, even if we are sure that the other kidney is healthy, experience shows that two kidneys are not one too many for an individual, and that many would be glad of a larger allowance. Eight personal observations are given of the greatest interest, for which we must refer our readers to the original, only here remarking that in two cases pressure on a right kidney caused pain in the *left* lumbar region, an observation very instructive to the gynæcologist, who often finds the same phenomena in connection with the ovaries. The paper ends with a list of 45 cases, from which, on analysis, we find that 11, or about 25 per cent., had pen-

dulous belly; 6, or about 13 per cent., had descent of uterus or vagina; 3, or about 7 per cent., had hernia; and 7, or about 15 per cent., had "retroflexion" of the uterus. Displacements of the uterus are frequently mentioned by the author, but he never uses any word but "retroflexion." If these proved to be cases of retroversion with descent, with or without retroflexion, all the above women, twenty-five in all, or more than 55 per cent., suffered from diseases associated with disturbance of the intra-abdominal relations of pressure—a most pregnant fact.—*Lancet*, April 22, 1882.

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Floating Kidney in the Female.

There is a great diversity of opinion as to the pathological importance and therapeutic indications of floating kidney. The majority of clinicians regard them as anatomical curiosities, and of no clinical moment; lately, however, KEPPLER claims that a floating kidney is a continual menace to the life of the patient, and that the danger should be removed, as soon as detected, by the extirpation of the organ. Landau, in his work on this subject, gives us an analysis of forty-five cases, and arrives at conclusions opposed to those generally held. He believes, with great probability, that a movable kidney often escapes detection, or may be wrongly interpreted. It occurs generally in women between the ages of 30 and 40 years, from special predisposing causes, or from displacement by tumours, rapid diminution of fat in acute diseases, or relaxation of the abdominal walls after gestation. Habitual constipation may also be an exciting cause of displacement of the kidney, or the downward displacement of all the abdominal viscera from tight lacing may drag the kidney from its normal position. Among other exciting causes are mentioned prolapse of the genital organs, hydronephrosis and abnormal laxity of the perinephritic tissues.

Instead of explaining the symptoms as due to torsion of the renal vessels, and a consequent disturbance of the renal circulation, Landau believes that they are dependent on the varying facilities of excretion depending upon the different degrees of torsion or flexion of the ureters.

This is the most satisfactory explanation of the colicky pains and hydronephrosis often accompanying movable kidneys. Palpation furnishes the most reliable means of arriving at a diagnosis. Landau believes that a movable kidney in no way threatens life, and that as spontaneous cures often occur, nephrectomy is not a justifiable operation, especially since of the six cases, thus operated on up to the end of 1880, three were fatal.

In order to render the kidney immovable, Landau employs a corset descending to the pubes, and electricity, massage, and sea-baths to increase the tone of the abdominal walls. Complications are not regarded by Landau as generally fatal, and he only recommends expectant treatment.—*Journ. de Méd. de Paris*, April 1, 1882.

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Palpation of Vesical Calculi in Children.

In No. 11 of *Centralblatt für Chirurgie*, RICHARD VOLKMANN contributes the following concerning the diagnostic value of rectal examinations in cases of vesical calculi in children:—

The value of a rectal bimanual examination in children suffering from stone in the bladder is recognized by all. The examination is made whilst the patient is thoroughly under the influence of an anæsthetic, with complete relaxation of the abdominal parietes and the bladder but slightly distended or empty. Two fingers of the left hand are carried as high up into the rectum as possible; the right hand presses upon the abdomen above the symphysis and forces the bladder

downward toward the rectum until both hands meet. In children the whole bladder can be palpated by this method, and even small calculi are readily detected. It requires considerable practice and experience, however, to determine the size of the stone, although it can be distinctly felt and moved about between the fingers of both hands, and at first he was often deceived concerning the size of the calculus; usually he considered the stone smaller than it proved to be after being extracted.

Of late, he has found, however, that there exists a yet more certain method to determine the size of a calculus in children by direct palpation. By means of the fingers of the left hand, which have been introduced into the rectum, and guided by the right hand which rests upon the abdomen the stone is lifted upon the os pubis and held there. It is an easy matter then to completely encompass it, and to allow those about to handle it. If the calculus is not too large, it is possible to raise it, together with the skin of the groin, so high as to tie it with an elastic ligature. He does not mention this, however, to suggest the elastic ligature as a method of removing vesical calculi, but because it may be possible to utilize it in such movable tumours of the bladder as are observed in pediculated papillomata and myomata.

In the last four cases of stone in children which came under his observation he succeeded very readily and without exception in dislocating the calculus upon the os pubis and in encompassing it with his fingers. The last stone which he palpated in this manner was as large as a chestnut.

In adults this manipulation can, of course, be performed only in spare subjects with thin abdominal walls.—*St. Louis Med. and Surg. Journ.*, May, 1882.

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Tumour of the Bladder in the Male successfully removed through Perineal Section.

At a meeting of the Royal Medical and Chirurgical Society, held April 11th, Sir HENRY THOMPSON reported the following case: Thomas R., aged 29, consulted Sir H. Thompson on July 26, 1880. Eight years previously he had passed "a piece of gravel of the size of a pea." After this he felt nothing unusual until 1877, when his micturition became more frequent, and was followed by pain in the end of the penis; also, occasionally, blood appeared in the urine, especially after exercise. The patient was sounded, and a small calculus was found. On August 5th, Mr. Bailey gave ether, and Mr. Furber, who had seen R. previously, was present at the operation. It was a small oxalate of lime calculus, and was easily crushed and removed. Very little improvement followed the operation. The bladder was not quite emptied by the natural efforts; the gum catheter was used daily, and on two occasions gave signs of the presence of something in the bladder, which a subsequent exploration with the lithotrite did not discover. Being relieved, he resumed his employment, and was occasionally seen relative to the still existing slight symptoms, which gradually increased. On October 5th, Sir H. Thompson examined the bladder, and removed a quantity of phosphatic deposit with the lithotrite. He then seized what at first felt like a calculus, and partially crushed it under pressure; but it was evidently fixed, giving an impression of partially impacted stone. More phosphatic matter being washed out, it was decided to watch the result for a short time, and to open the bladder if necessary. Accordingly, as after three weeks he had received very little benefit from the last operation, Sir Henry cut, as in median lithotomy, on the 6th November, 1880. Professor Paggi, of Florence; Dr. Seegen, of Vienna; and Mr. Ceely, of Aylesbury, were present. Having introduced his finger well into the bladder, and pressure being made above the pubes, Sir H. Thompson recog-

nized a tumour, about the size of a chestnut, growing apparently from the opposite wall or fundus, and somewhat to the patient's left, coated with phosphatic matter, and evidently the fixed body he had formerly seized with the lithotrite, and denuded of its sabulous covering. Taking a pair of small forceps, he adjusted them to a full and firm hold, and then twisted off the mass without difficulty; a small piece or two were subsequently withdrawn, but the tumour appeared to be entirely removed, and very little bleeding followed. He had no bad symptoms, made a rapid recovery, and speedily regained good health, never having had any return of symptoms since the operation. The patient was presented at the meeting, in excellent health, and quite free from all urinary symptoms. Regarding this and other cases which had afforded similar results, the author advised that, in certain cases of hæmaturia which was clearly vesical, and was not explicable, except by the hypothesis of impacted calculus or vesical tumour, an incision of the membranous urethra from the perineum, for the purpose of exploring the bladder, should be made. He proposed the incision ordinarily made in the median operation of lithotomy for the purpose of introducing the finger, and forceps if necessary, for research and removal when necessary. The symptoms were described, the possible presence of which generally indicated the necessity, or, at all events, the propriety of adopting such a proceeding. The tumour was examined by Mr. Stanley Boyd, of University College Hospital, and was found to be a simple fibroid.

Mr. John Marshall said that it was evident that there must have been many cases of the kind in which an operation would have been useful; and Sir H. Thompson's case offered great encouragement for its performance. The diagnosis of tumours of the bladder, and the mode of operation and after-treatment, were important matters.

Mr. Bryant approved of the operation adopted by Sir Henry Thompson, the theory of which had been yearly growing in favour. He had not had an opportunity of operating for tumour in the bladder, though the proceeding had suggested itself to him in three cases, in which hæmaturia and other symptoms were present. In one of the cases, the bladder was found, after death, to be full of villous growths. In the other two, there was cancer. Any operation would have been useless in these cases; but the records of surgery contained reports of many cases in which surgical interference would have been justifiable. A clean cut into the bladder, for the purpose of exploration, was not a severe matter, and was quite justifiable in cases which, without it, were evidently hastening towards death. Good results sometimes followed simple incision in inflammatory states of the bladder. As regards the kind of operation, the median was perhaps the best, where the prostate was healthy and the neck of the bladder sound; while, in other conditions, the lateral operation was to be preferred.

Mr. Reginald Harrison said that he had little doubt that the case described would give an impetus to operations on the bladder for other purposes than the removal of stone. He could remember the time when, if a surgeon, in performing lithotomy, found anything but a stone, he was looked on with suspicion. He asked whether median cystotomy was really the best mode of proceeding in a case of tumour involving the wall of the bladder. He had opened the bladder from every accessible part; and had always felt, that the median operation gave him least command over the parts, while the lateral incision gave most room. He thought that the danger of hemorrhage in the lateral operation had been rather overrated.

Mr. Henry Morris asked whether an incision in the median line was not equally justifiable, when, though a cure could not be obtained, relief of pain and other symptoms might be afforded, as in chronic cystitis and tubercular cystitis.

He had lately met with an obstinate case of chronic cystitis, in which he had made an incision in the middle line of the perineum, with great relief to the patient, who, however, died at the end of seven weeks from suppuration of the kidneys. He preferred the median incision, because the wound had less tendency than the lateral to heal rapidly.

Mr. HOLMES said that opening the perineum for chronic cystitis was a different matter from the operation described by Sir Henry Thompson. It seemed that the great difficulty was to diagnose between tumours such as those in Mr. Bryant's cases, and chronic cystitis. He did not wish to cavil at the operation of opening the bladder in cases of tumour; he had himself contemplated its performance. When the sufferings of the patient were very great, and the presence of a tumour was indicated, an operation for its removal was justifiable; but where the symptoms were acute, and the growth was making rapid progress, the operation should only be undertaken at the urgent request of the patient's friends. Cystotomy, for the relief of chronic cystitis, was an established operation. He thought that there was no difficulty in keeping the wound open after the lateral incision; and this appeared a better means of reaching all parts of the bladder than the median incision.

Mr. BERKELEY HILL said that cases where a tumour in the bladder could not be dealt with were probably not so numerous as was supposed. The fate of all cases of tumour of the bladder seems so certain, that it would not be right to be deterred from operating by fear of hemorrhage. An opening should be made at once, whenever there appeared any reason to suppose a tumour to be present.

Mr. PEPPER had seen five cases of operation for tumour in the bladder. The first case was that of a female child at University College Hospital, under Mr. Marshall. The child died; and the bladder was found to be filled with a mass of gelatinous polypi. In the second case, there was an enlarged middle lobe of the bladder, which was excised before removing a stone; the man died. The three other cases were at St. Mary's Hospital. Two of the patients died: one from hemorrhage, and one from pyæmia; and the third had an incurable fistula left after the operation. He asked Sir Henry Thompson what would be the best mode of operating on the female bladder. The choice of operation would depend on the character and structure of the tumour.

Mr. GODLEE asked whether actual examination gave an aid to diagnosis.

Mr. J. MARSHALL said that cases of tumour of the female bladder stood entirely apart from those of the male bladder; rapid dilatation of the female urethra enabled the bladder to be readily examined. Encouragement to operate on tumours in the male bladder was afforded by the fact, that the deaths after the operation in males were not more numerous than those in females. In the diagnosis, the age of the patient must be taken into account. The movable tumours (fibroid and polypoid) occurred in children and middle age; cancerous and villous growths later in life. As regarded the operation, some surgeons might prefer one to the other; but the lateral incision seemed to have been generally chosen; it was used in all the successful cases. In most of the unsuccessful cases, the growths had been pedunculated; and, in all the successful cases, the patients had gone on remarkably well, without hemorrhage or other unfavourable symptoms.

Sir HENRY THOMPSON would define the conditions on which operations for the removal of vesical tumours should or should not be performed. There had been great want of clearness in the definition in the successful cases; prostatic outgrowths having been often confounded with tumours of the bladder, from which they were totally distinct. No case of malignant tumour should be operated on; but it was difficult always to identify such tumours. This might be done by rec-

tal exploration, when an irregular hard mass would be felt, especially when pressure was made on the bladder from above. Still the diagnosis was difficult. He would not operate in such cases, nor in villous tumours. He had desired to bring under notice the propriety of making an incision through the perineum in proper cases. Incision was a very simple matter, and often gave much relief; and it was indicated in other conditions besides tumour of the bladder. He believed that there was no difficulty in exploring the whole interior of the bladder by the finger through either the median or the lateral incision, unless in very stout persons. The patient should have an anæsthetic, and an assistant should make pressure above the pubes. In a case of obstinate vesical hemorrhage, he made, two months ago, an incision, and removed a small flake of phosphate from the bladder; since that time there had been no return of the hemorrhage. He had also operated three weeks ago on a medical man, who, for the last year or more, had passed all his urine through a catheter. The patient believed that there was a calculus impacted at the neck of the bladder; but nothing of the kind could be found. An incision was made in the median line, and the mucous membrane of the bladder was found to be healthy. The patient was greatly relieved, and required to pass urine only seven or eight times, instead of fourteen or fifteen, in twenty-four hours. The operation was not cystotomy, but perineal section; and it was mostly all that was wanted. In lithotomy, it was not the incision that was dangerous, but the removal of the stone. He preferred median incision; but the mode of operating to which the surgeon had been accustomed was the best. He did not advocate opening the bladder in all cases of difficulty; he had only desired to point out where this might be done with advantage.—*British Medical Journal*, April 15, 1882.

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The Operative Treatment of Phimosis.

Dr. LACLAVOIX believes that every case of congenital phimosis, on account of the numerous inconveniences which it entails, should be operated on. No operation should be performed for accidental phimosis in the acute stage, except in special conditions, but when it has become chronic, an operation is indispensable.

The different operative procedures may be divided into four groups: Incision, excision, circumcision, and dilatation. Simple incision should be nearly always rejected; excision is applicable to only few cases; circumcision should be generally employed. Dilatation should be rejected in cases of cicatricial phimosis, but may be successfully employed in cases of congenital phimosis, although even in these instances it is generally necessary later to excise a portion of the prepuce. Serre-fines are generally made use of to facilitate union, but sutures are equally as good.—*Bull. Gén. de Thér.*, April 30, 1882.

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Treatment of Chancroids and Chancrous Buboes with Salicylic Acid.

Dr. AUTIER believes that, without being a specific, salicylic acid can be of great service in these affections. He recommends that the ulcers should be carefully dried twice daily, and then covered with powdered salicylic acid; in the interval, they should be washed every two hours with a five per cent. solution of salicylic acid in glycerine, which should also be injected into the cavities of buboes. If the buboes have narrow openings, he recommends compression; otherwise they are to be covered with charpie soaked in the salicylic acid solution and maintained in position with a spica bandage. When the surface of the ulcers appears healthy, as is usually the case in a few days, the solution may be diluted

with two or three parts of water. The application of the powder should be continued until the wound reaches this healthy condition.—*Bull. Gén. de Thér.*, April 30, 1882.

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Destruction of Chancres as a Means of Aborting Syphilis.

Dr. PAUL SPILLMAN draws the following conclusions from an analysis of eight cases in which excision of the primary lesion of syphilis was practised:—

1. Even in cases where the excision seems to have been followed by successful results, it cannot be positively affirmed that the operation produced an abortive effect on the disease, as chancres apparently infective, which were not followed by secondary phenomena, have often been noted.

2. The operation of excision is not a dangerous one when it is accompanied by appropriate antiseptic precautions; cicatrization by first intention, and without any complication, usually rapidly occurs.

3. In certain cases it may be very difficult to excise the chancres without serious mutilation of the organs on which they are situated.

4. The evolution of syphilis, glandular enlargement, secondary symptoms, etc., is in no way influenced by the excision.

5. It has been claimed that the violence of the disease is diminished by excision; that the chancre is the seat of elaboration of the syphilitic virus, and that therefore its excision would serve to diminish the intensity of the affection. But the observation of two of the cases reported proves that excision, even when performed under the most favourable conditions, may be followed by the gravest form of syphilis.—*Ann. de Derm. et de Syphilog*, Mar. 25, 1882.

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Wounds of the Theca Vertebralis, with Discharge of Cerebro-Spinal Fluid.

A paper on this subject by Mr. T. HOLMES was read at the meeting of the Royal Medical and Chirurgical Societies on April 25th. Referring to a case published in the sixtieth volume of the Transactions, in which a copious flow of limpid fluid took place from a wound in the back, and in which it was believed that the ureter was wounded, though it was also admitted as possible that the fluid might have been cerebro-spinal, the author relates two cases: one under his own observation in a patient of Mr. Rouse, at St. George's Hospital, the other from the *Lancet*, in which a similar copious discharge of watery fluid was caused by a wound of the spinal membranes, not involving any wound of the cord or large nerves, as proved in one case by post-mortem examination, and in the other by the position of the puncture. Such wounds do not of themselves produce any symptoms, the loss of fluid being gradual, and the fluid no doubt rapidly re-secreted. Inflammation around them may interfere with the functions of the cord or nerves, even to a fatal degree, and there seems some warrant for believing that the very sudden withdrawal of large quantities of the fluid (as in operation for spina bifida) may produce dangerous syncope.

Mr. HUTCHINSON alluded to the frequent and often copious and long-continued escape of fluid from the ear in head injuries without detriment; but had no facts to add as to wounds of the theca vertebralis. He had not seen immediately serious consequences following rupture or tapping of a spina bifida. Almost constantly, however, arachnitis follows rupture of spina bifida with a small opening; though he had seen one or two cases in which shrivelling of the tumour had ensued on what was described as a rupture of the sac. The liability to arachnitis following escape of the fluid would depend upon the kind of opening present.

Mr. T. SMITH concurred in the statement that the mere escape of fluid from a spina bifida is not followed by immediate ill effects; but if the flow last long,

inflammation is liable to follow. He had seen cases which had continued to leak for days. He had seen cases of death and cases of recovery after spontaneous rupture of a spina bifida; in the latter case the sac shrivels up. He once saw a case where a mistake in diagnosis had led the practitioner to make a long free incision into the sac; and to his (Mr. Smith's) surprise the child rallied from its state of depression, although it eventually died. The fluid is very rapidly re-secreted. As to treatment of the wounds described, there would be more chance of getting closure if treated at once; and the first case related by Mr. Holmes showed the difficulty there was in getting this result at a later period.

Mr. MORGAN had assisted Mr. Holmes in one of the cases referred to. It was that of an infant with a congenital tumour below the mid-dorsal region of a sausage shape, and pedunculated. Pressure had no influence on it; and it was, therefore, removed by an elliptical incision on either side; but when the incision divided the centre of the base of the tumour, the child became collapsed, was with difficulty restored, and died in twelve hours. Mr. Holmes thought the result due to carbolic acid poisoning; and the urine was certainly blackened. The symptoms so resembled another case lately under Mr. Morgan's care that they might both be attributed to the direct effect on the spinal canal. This was a case of a somewhat larger tumour, also pedunculated, and uninfluenced by pressure. It was tapped and cerebro-spinal fluid escaped, followed by immediate collapse, with temporary recovery. Morton's iodo-glycerine was injected into the sac, the pedicle being secured by a ligature, but death took place in a few hours. He was at a loss to explain these events unless from a direct action on the nervous centres. He knew of a case in which the midwife with a pair of scissors slit up the spina bifida without ill result. So that it seems there is more danger when the opening is small than when it freely communicates with the canal.

Dr. WHARRY suggested that the reason why tapping a spina bifida was not followed by immediate effects was possibly due to the rapid re-formation of fluid, and also to the subarachnoid trabeculæ not allowing a very great loss to take place.

Mr. JOHN MARSHALL, referring to the subject of wounds of the theca, thought the diagnosis could be rapidly made. Probably in all these cases the presence of some inflammatory action altered the characters of the fluid so that it contained more solid matter than normal. The result may depend on the seat of the wound; if high, being more dangerous than if low down; and also upon the subject wounded. If the wound was quickly closed, there seems no reason why puncture of the theca should be so serious. The fluid has probably something more than a mere mechanical function. In a case of spina bifida in which he was about to inject iodine, the raising the child to a sitting position in order to safely inject the solution after drawing off six or seven ounces of fluid, produced syncope and a convulsive attack. Thus sometimes cerebral disturbance may be set up.—*Lancet*, April 29, 1882.

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Treatment of Fractured Thigh.

Dr. HERMANN KÜMMELL, of Hamburg, writes, in the *Berl. Klin. Woch.*, No. 4, 1882, that, for the treatment of fracture of the femur in an infant, the safest and most convenient and successful method is that of vertical extension. This method was first tried by Dr. Schede of Berlin, in 1877, and has since been carried out by this surgeon in all his cases of fractured thigh in children under two years of age, and also in some cases in which horizontal extension had failed with children between three and four. In horizontal extension, in addition to

the eczema and excoriation caused through the constant soiling of the bandages by excretions, and to the great labour attending frequent renewal of the bandages, especially when it is necessary, as in fracture through the upper third of the femur, to include the pelvis, there is the further evil of enforced frequent movement of the injured part, through which movement consolidation is retarded, and dislocation and shortening of the fractured extremity rendered probable results. In this method of treatment, a long continuous band of plaster is fixed to both sides of the injured limb, as high as the seat of fracture, and applied so as to form a free loop below the sole. This long strip is then secured in the ordinary way by circular strips of plaster and by circular turns of a bandage. The leg, having been elevated, is then kept in the vertical position, with the corresponding side of the pelvis suspended, by means of a piece of cord fixed to the loop of plaster, and either attached above to some object over the bed or slung over a pulley, with its free extremity supporting a weight. The fragments of the broken bone then fall into proper position, and remain so, if the extension be maintained until firm union is established. The little patients, it is stated, tolerate this treatment very well, and at once cease to suffer from pain in the injured thigh. Vertical extension does not necessitate constant and complete rest on the back; but Dr. Kümmell does not insist on this as one of the advantages of the method, as he is opposed to the view held by many surgeons, that prolonged rest on the back is dangerous with young patients, and that it causes pulmonary affections and disturbance of the general health. Rotatory displacement of the fragments is not to be feared as a result of vertical extension. In most of the cases observed by Dr. Schede and the author, callus has formed rapidly and in abundance; and in healthy children, it is asserted, consolidation of the fragments is usually well established by the end of the third week, when the bandage and strapping may be removed and the limb lowered. The usual result of this treatment is stated to be speedy and firm union, without displacement, and without any shortening of the injured limb. One disadvantage is mentioned as likely to occur in female infants subjected to this mode of treating fractured thigh. As a consequence of free entrance of air into the gaping ostium vaginæ, the little patient may suffer from severe vaginal catarrh, which condition will persist as long as the vertical extension is kept up, but subsequently may be soon removed by careful cleansing and the local application of weak astringents. A tabular statement is appended of twenty-eight cases of fractured thigh in infants treated by this method. Of these patients, twelve were under twelve months of age, and sixteen between the ages of one and two years.—*London Medical Record*, April 15, 1882.

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New Method of Treating Simple Transverse Fracture of the Patella.

Mr. LUND, of Manchester, read a paper on this subject at the meeting of the Medical Society of London, held April 17. On the assumption that the chief, if not the only, cause of non-union in such cases is imperfect apposition of the broken fragments, so that actual contact of the osseous surfaces is not attainable, Mr. Lund has adopted this plan: For the first six or eight days the limb is extended on a back splint with foot-piece, and slightly raised; cold evaporating lotion or ice is applied to the knee until nearly all effusion within and external to the joint has subsided. Then while the patient is under the influence of an anæsthetic, a strong steel pin is drilled through each portion of the patella, from the external to the internal border, a small hole being made in the skin by the entrance and exit of the pin, great care being taken by the mode in which the patellar fragments are pierced that the point of the screw-pin does not injure the articular surface of the bone. These screw-pins, which should be placed as

nearly as possible in parallel lines, are next drawn very closely together until the broken surfaces of the bone are brought into perfect contact by means of a double screw instrument which, for the time, holds them firmly in position; while so placed the ends of the pins are inclosed in a coil of very thin copper wire, so arranged in repeated turns as to gain great strength, and then, when the pins are completely fixed, the double-acting screw instrument is removed, the broken surfaces of the bone remaining in absolute contact. Mr. Lund demonstrated the method very clearly by using the knee-joint from an artificial leg in which the broken patella was represented by two pieces of cork kept apart by elastic bands and covered by a knee-cap to imitate the skin. He gave the particulars of two cases so treated with excellent results, and also a third case now under treatment at the Manchester Infirmary. Contrary to what might have been anticipated, these steel pins do not produce any local or constitutional disturbance, although retained *in situ* in the first case for 37 days, and in the second for 43 days, when good osseous (?) union was obtained.

Mr. Adams believed that often even ligamentous union failed, and only a periosteal fibrous union took place. A true ligamentous union would not stretch to a greater extent than an inch. He had obtained fairly successful results with Malgaigne's hooks, getting very short ligamentous union; and had never seen any ill results from their use, though such had occurred at King's College Hospital.

Mr. Royes Bell said the patient alluded to by Mr. Adams was a middle-aged woman in broken health. Erysipelas set in about the punctures of Malgaigne's hooks, and suppuration extended into the joint, causing death. In a case of his where ligamentous union took place, the patella was subsequently fractured in another place, the ligamentous union remaining intact. In a case of double fracture one patella was treated with, and the other without, Malgaigne's hooks. The union obtained by the hooks was better than that without them.

Mr. H. Morris ascertained from Mr. Royes Bell, that the fracture treated without Malgaigne's hooks was considerably anterior to the other, and he thought that this might account for the superiority of the latter. He asked what kind of union Mr. Lund believed himself to have attained. He believed a close ligamentous union to be superior to an osseous, and pointed out that the method advocated by Mr. Lister had been practised by other surgeons previously with success, and that Mr. Lister did not claim its invention.

Mr. B. Squire thought Mr. Lund's rods would probably promote the formation of callus.

Mr. Bryant would prefer Mr. Lund's method to that of opening the joint, if either was necessary. Mr. Lister only recommended his plan in apparently desperate cases, and in such rare cases, he (Mr. Bryant) would prefer Mr. Lund's method. The ordinary methods, in his experience, had produced very good results, and some of the patients were able to follow the occupation of porters, bargees, etc. He pointed out the risk of injury to the articular surface of the bone in Mr. Lund's operation, and had not a favourable opinion of Malgaigne's hooks.

Mr. Lockwood advocated Mr. Manning's plan, as adopted at St. Bartholomew's Hospital.

Mr. Gant treated fractured patella by semicircular pieces of gutta-percha placed round the limb above and below the patella, and kept in apposition by Malgaigne's hooks, aspirating the joint if much effusion was present. The interval between the fragments on leaving the hospital was about a quarter of an inch, and although it often became increased the utility of the limb was not lessened.

Dr. DOWSE suggested division of the rectus to aid the apposition of the fragments.

The PRESIDENT said he had found the results of the ordinary treatment to be satisfactory. In bad cases he had used a method of bringing the fragments together by pins.

Mr. LUND, in reply, said that Malgaigne's hooks were apt to cause tilting of the fragments. In one case he thought he obtained bony union. Very little irritation was caused by the rods, and no callus was induced. He would only use his method in recent fractures, and not in broken constitutions. He had seen very satisfactory results from section of the rectus muscle. Its advantage over Malgaigne's was that the former brought pressure to bear on hard tissues, and the latter on soft tissues liable to suppurative inflammation.—*Lancet*, April 29, 1882.

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Aneurism of the Left Axillary Artery; Ligature of the Subclavian; Rupture of the Sac; Amputation at the Shoulder-joint; Recovery.

At the meeting of the Clinical Society of London, held March 10th, Mr. HOWARD MARSH read notes of this case. The patient was a carman, aged 32. He had never had syphilis, nor any serious illness. Eight weeks before admission, he found a small pulsating swelling in the armpit. This rapidly increased, and, when he came to the hospital, measured nineteen inches over its most prominent part. There was great œdema of the whole limb. No pulse could be felt at the wrist. After the patient had been at rest for three days in bed, the subclavian was tied, under the carbolic spray, with a silk ligature, the ends of which were cut short. The case progressed favourably for three or four days, but then the swelling gradually increased in size, and on the seventeenth day hemorrhage occurred from the sac. This having recurred on the eighteenth day, the swelling was laid open, with the object of tying which ever proved to be the bleeding end of the artery. As, however, a gush of arterial blood immediately occurred, and as the patient was still in a very exhausted state, it was thought best to amputate at once at the shoulder-joint. The patient made a favourable recovery. The author remarked that the cause of the aneurism was probably a small rupture of the coats of the axillary artery, resulting from a strain. The case was a good illustration of the usual features of aneurism in the axilla, in respect to its rapid increase, the large size the swelling might attain, and the tendency of the sac to rupture. Ligature of the subclavian—the method of treatment most often successful—seemed to offer the best prospect of cure. It failed through the free establishment of the collateral circulation. Had the patient been in a less exhausted condition, the limb might perhaps have been saved by Syme's operation, even when the sac had given way; but weak as he was, amputation seemed the safer expedient. The silk ligature, after it was thrown off, travelled toward the surface, and could at one time be felt close beneath the skin, and a small shred was discharged through the wound. How it was afterwards disposed of was not known. It never, however, was observed to escape externally. The silk ligature, the author thought, was unsafe, as it was apt to act as a foreign body, and so to provoke a dangerous process of ulceration in the neighbourhood of the artery. He should, on any similar occasion, employ the kangaroo-tendon ligature, which, so far as present experience had shown, was perhaps the most reliable form now in use.

Mr. GOLDING-BIRD suggested that silk should always be soaked in wax, and never in oil. It was curious that in this case a portion of the silk had been removed.

Mr. MARSH thought the ligature had cut through and had been found as of old, but only a shred remained.

Mr. C. HEATH was loath to criticize a case which he had not seen, but it seemed that there had been a doubt as to whether the aneurism had given way. When the vessel was ruptured, then it was surely the recognized practice to open the sac and tie both ends of the vessel. This was what was done in Mr. Syme's well-known case; still, it had been contested by surgeons of eminence. It was best, however, to obtain complete control over the subclavian in the first instance.

Mr. BARWELL thought that in all probability the aneurism had given way. He should have liked to know something about the temperature. The danger of tying vessels in their continuity was now greatly lessened by the use of animal ligatures.

Mr. MORGAN asked what was the condition of the limb itself when removed.

The PRESIDENT considered that the aneurism had in this case given way, but even then he did not think that ligature of the main artery was hopeless. He had himself, in two cases of diffuse popliteal aneurism, cut down in Scarpa's triangle, even through clots, and tied the femoral. This procedure was far more likely to be successful than groping about among clots for the ends of the ruptured vessel. The case recorded afforded another example of carbolized silk making its way through the vessel. It was this that originally made him think of catgut. For his own part, he would not use oil or wax, but only carbolized water, for silk; still, he preferred animal ligatures. He had again turned his attention to this, and he had found catgut prepared with water alone worse than that prepared by sulphurous acid. After use, it showed more superficial infiltration. But he had found the best to be that prepared in chromic acid and sulphurous acid. This might be dried, and was ready for use at any time by simply putting in carbolized water.

Mr. MARSH, in reply, said that when the case occurred this was the best ligature he could get. No doubt ligature of the subclavian had cured axillary aneurism; and then the man, when seen, was sinking. Should he come across another case, he would tie the vessel first again.—*Brit. Med. Journal*, March 25, 1882.

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Popliteal Aneurism.

Prof. BARDELEBEN reports, in the *Berliner Klin. Woch.*, No. 1, 1882, a case of popliteal aneurism, and adds some remarks of interest on the treatment of the affection, which seems to be of much less frequent occurrence in Prussia than in this country. The subject of this case was a working tailor, aged 46, who complained, for the first time, of pain and stiffness behind the right knee, in May, 1880. One month later, he noticed pulsation in this region, and four months later observed a distinct tumour. At the end of the year he came, as a hospital patient, under the care of Professor Bardeleben. There was then seen in the right popliteal space an elastic pulsating tumour of the size of a man's fist, which diminished in size and ceased pulsating on compression of the femoral artery. No history of injury could be made out. The patient seemed to have been quite free from syphilitic disease and from rheumatism; the heart was clearly quite normal, and no indications of vascular disease were presented by the radial, temporal, or posterior tibial arteries. The tumour was attributed by the man himself to his habit of always standing when at work.

In the treatment of this case, the affected limb was first fully flexed at the hip and knee, and occasional digital compression was applied to the femoral artery.

This plan was kept up for four days, during most of which period the pulsation in the aneurism was arrested, but had to be discontinued in consequence of much œdema in the foot and leg, and also of sloughing over the heel. The next attempt consisted in applying instrumental compression to the femoral artery. The vessel was readily controlled by pressure of this kind without any complaint from the patient of pain or even uneasiness, but in the course of twenty-four hours gave rise to sloughing of the skin. This result followed the application of a tourniquet first below Poupart's ligament, secondly, above this ligament, and again in the middle third of the thigh. A subsequent attempt to treat the aneurism by the application of an elastic bandage to the limb, and of Esmarch's ligature above the knee, caused much pain, and was followed by sloughing of the skin over the instep, and also by a sudden attack of peculiar mental and nervous disturbance, in which the patient attempted to commit suicide. As it was found that pressure invariably caused sloughing, and as no progress had hitherto been made towards cure of the aneurism, Professor Bardeleben decided on applying a ligature to the femoral artery on Scarpa's triangle. The material employed for this ligature was carbolized catgut, and the operation was performed under strict antiseptic conditions. The wound was dressed antiseptically, and, notwithstanding the proximity of the sloughing sores that had been caused by compression, it healed in the course of eleven days, without the discharge of a single drop of pus. The patient made a speedy recovery, without fever or any other bad symptom; and, although on the third day a large pulsating vessel was observed on the inner side of the knee, and the temperature of the limb during the first two days after the operation did not fall, but rather increased, the aneurismal tumour became hard and small, and soon disappeared, without any return of pulsation. It was noticed, very soon after the application of the ligature, that, whilst the inner side of the thigh had become anæsthetic, the outer side preserved its sensibility. This, Professor Bardeleben thinks, was probably due to the fact that the arterial supply of the outer part of the thigh is derived from the profunda.

In some remarks on this case, Professor Bardeleben states that there was, without doubt, a peculiar tendency in the patient's skin to become gangrenous on the application of even slight pressure. The man did not suffer from diabetes, but the fact of a few small doses of iodide of potassium, administered at an early stage of the treatment, having suddenly caused an eruption over the whole surface of the body, indicated some abnormal condition of the skin. Such condition, as shown by the sudden dilatation of the small cutaneous vessels through the action of an internal irritant, might, it is suggested, have been the origin of the impairment and loss of vitality in the skin, caused by such pressure as would not have had such bad results if applied to the skin of other subjects. In discussing the rival claims of deligation and external compression in the treatment of popliteal aneurism, Professor Bardeleben gives it as his opinion that, though the risks attending the cutting operation may be much reduced by carrying out Lister's antiseptic method, it is better to have recourse to that plan of treatment, which, from its not necessitating any division of skin, is of an antiseptic character. Compression, however, ought not to be carried too far in unfavourable cases; and, when it is clear that the affected limb will not tolerate such treatment, the surgeon should at once resort to antiseptic deligation.—*London Med. Record*, April 15, 1882.

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Angioma Communicating with the Jugular Vein.

At the meeting of the Société de Chirurgie, on May 3, M. Farabeuf read for M. Reclus an account of a case of cavernous angioma communicating directly with the jugular vein. On the same occasion M. DESPRÈS also reported a similar

observation made on a child who came to the Cochin Hospital with a soft and irreducible tumour on the neck three fingers' breadth below the lower jaw. It was intended to make an exploratory excision, but believing it to be a cyst, it was opened with a bistoury, when a jet of blood escaped, which was, however, controlled and union by first intention took place. After a few days phlebitis occurred, and proved fatal. The autopsy showed that the tumour communicated by a single venous trunk with the jugular.—*L' Union Méd.*, May 9, 1882.

OPHTHALMOLOGY AND OTOLOGY.

Surgical Treatment of Granular Ophthalmia.

BRACHET (*Receuil d' Ophthalmologie*, Feb. 1882) strongly advises the adoption of the surgical treatment employed by Galezowski in many cases of granular ophthalmia, namely, the removal by means of the scissors of the whole of the conjunctiva from the upper and lower culs-de-sac, followed by a few applications of mitigated caustic to the lining membrane of the lids. This treatment is rapid in its effects, and, as compared with other methods, is of very short duration; it insures a complete cure without danger; it saves the cornea from the serious complications which attend the prolonged use of caustics, and it enables the cornea to recover its transparency and polish. It succeeds where other treatment has failed.

Galezowski, by whom the operation was introduced some years ago, is stated to have performed it more than two hundred times, and always with success.

During a sojourn of three years in Algeria, the writer gained a wide experience of granular ophthalmia, and of the little real benefit obtained by treating it with sulphate of copper and similar applications. In proof of the value of the surgical method, he relates the history of two sufferers from this disease who were operated on in 1873 by Galezowski, and adds a description of their present condition. The one patient had suffered since infancy, and had never been treated; the other had suffered for two years, and had been laboriously treated at more than one ophthalmic clinique without permanent relief; neither was able to follow any employment. Excision of the conjunctiva, followed by a few applications of mitigated caustic, effected a permanent cure with restoration of corneal transparency. At the present time, eight years after the operation, vision is excellent; the culs-de-sac are wanting; the conjunctiva passes immediately from lid to globe in vertical cicatricial bands or folds, which in some places join the globe at the distance of one cm. from the corneal margin; the eyelids are intact and well furnished with lashes; the lachrymal apparatus in each case performs its functions normally; the movements of the eyes do not appear to be hindered in any direction.—*Ophthal. Rev.*, May, 1882.

Sclerotomy for Glaucoma.

At the last meeting of the Ophthalmological Society, the President, Mr. BOWMAN, announced that a discussion on sclerotomy would be held on June 8th. This operation, we may remind our readers, has been strongly recommended in recent years as a substitute for iridectomy in glaucoma. In 1867, the operation was foreshadowed by Wecker, who held that if, in iridectomy for glaucoma, an incision could safely be made in the sclerotic without removing any iris, that

would be the best course. In the following year, Stellwag carried this advice into practice in two cases. The theory upon which the operation was recommended and performed was, that the efficacy of any operation for glaucoma depended on the interposition between the lips of the wound of a layer of new and more porous tissue, and that such a layer was only to be obtained when the scar lay in the sclerotic. This, which came to be known as the "filtration scar" theory, was severely criticized by Schweigger; and at the International Congress in London last year, Professor Schoeler reported experiments on animals which appeared to disprove it. The operation itself has varied much in the hands of different surgeons. Stellwag, and later Quaglino (*Annal. d'Ocul.*, 1871) made a peripheral wound with an iridectomy knife; Wecker performed a subconjunctival operation, and, fearing prolapse of the iris, left the central third of the sclerotic undivided. In England, the first writers on the subject were Messrs. Bader (*Ophthal. Hosp. Rep.*, vol. viii.) and Spencer Watson; the latter, in a paper read before the Clinical Society in 1876, advocated its employment in acute glaucoma; but, as a rule, operators seem to have confined the operation to chronic glaucoma in its various forms. A very full summary and bibliography of the subject have been published by Mauthner in Knapp's *Archives* (vol. vii.). It is proposed in the discussion to deal, firstly, with the various manners of performing the operation; secondly, with the forms, stages, and complications of glaucoma to which the several methods of performing the operation are applicable; and, thirdly, with the *rationale* of the treatment. Should such an explanation be forthcoming, it would no doubt throw much light on the former heads of the discussion.—*Brit. Med. Journ.*, May 20, 1882.

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Affections of the Eye from Disturbed Circulation in the Carotid.

Dr. JUL. MICHEL (*Wiesbaden*, 1881) has found that if a carotid artery be compressed in man, a paling of the papilla of the corresponding side, a fainter column of blood in the arterial vessels, and a diminution in width of the venous retinal vessels may be observed for a short time. This stage passes quickly, and great venous stasis and absence of venous pulsation show themselves. A similar venous stasis of the retina is visible when one arm is stretched upward. Ligation of one carotid is followed, immediately after the operation, by complete arterial and venous anæmia; later, by filling of the collateral channels; but a venous hyperæmia persists on account of the diminution of arterial pressure. This alteration is observed in the eye corresponding to the ligated carotid. In the venous system of the side opposite to the ligated vessel, a stronger rhythmical pulsation can be seen. Atheroma of the carotid is in intimate relation with opacities of the lens; the so-called senile cataract, as well as unilateral cataract with unknown cause, finds in this a satisfactory explanation.—*Arch. of Ophth.*, March, 1882.

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A New Mydriatic.

Dr. EMMERT, of Berne (*Correspondenz-blatt*, Jan. 15) has made a series of experiments on the pupil-dilating powers of hydriodate of hyoscin, a crystalline salt obtained by treating hyoscin with hydriodic acid. Hyoscin is an alkaloid obtained from amorphous hyoscyamin. The results showed that the new salt acted more energetically and more rapidly than either sulphate of atropia or duboisin. The solution need not be stronger than 1 : 1000, and even then is more active than the half-per-cent. atropia-solution. It is also less poisonous than the latter. Even at its present price, which will naturally be reduced if the drug becomes better known, it is a cheaper, as well as a stronger, mydriatic than atropia.—*Practitioner*, 1882.

MIDWIFERY AND GYNÆCOLOGY.

Landmarks in the Operation of Laparo-Elytrotomy.

Dr. WILLIAM M. POLK, Professor of Obstetrics in the University Medical College, New York, recently demonstrated certain anatomical points bearing upon the operation of laparo-elytrotomy, before the New York Obstetrical Society. The remarks made by Dr. Polk on that occasion appear in an amplified form in the May number of the *New York Medical Journal and Obstetrical Review*. The specimen shown, taken from the body of a woman who had been murdered in the seventh month of pregnancy, was a dissection showing the relations of the pelvic contents during the latter part of gestation, and especially the course of the ureter. Practising the operation upon this and other cadavers, the author has found that the ureters do not follow the pelvic wall to a point near the ischial spine, as in the non-pregnant condition, but that, crossing the pelvic brim at the common iliac bifurcation, the left just behind, the right just in front of, that point, they descend into the canal to the brim of the bony pelvis, the point being about the synchondrosis. In this course they accompany the internal iliac artery, the right in front of the vessel, the left crossing it obliquely. Reaching the bony brim (the ilio-pectineal line), they leave the pelvic wall, emerging from beneath the base of the broad ligaments (in pregnancy about on a level with the pelvic brim, and carried back on a line with the synchondrosis), and take a course downward, forward, and somewhat inward, passing about midway between the pelvic wall and the cervico-vaginal junction, but approaching very closely the antero-lateral wall of the vagina, as they turn more decidedly inward, on a lower plane, to strike the base of the bladder three-quarters of an inch below the cervix, terminating in the bladder at a point (the subject being on the back) just two inches below the spine of the pubes. A line drawn from the bifurcation of the common iliac to the spine of the pubes corresponds in the main to the line of the ureters. Along this line they have the following relations to the pelvic brim (in the recent state): At the bifurcation, half an inch below, at the extremities of the transverse diameter of the pelvis, about an inch; and at the spine of the pubes two inches below. As a whole, the tubes in the pelvis are situated upon a higher plane than in the non-pregnant condition, having been carried slightly upward while being separated from their close relations with the pelvic wall by the ascending uterus. How far they may be elevated in a case of extreme pelvic deformity with a pendulous abdomen, and the uterus correspondingly displaced, the author is unable to say, but thinks it probable, that the bladder being empty and not dragged upwards, thus preserving the normal position of the vesical end of the tubes, the displacement would not be such as to bring any part of them much above the points indicated.

Another matter which Dr. Polk took occasion to investigate was the ground of the objection to operating upon the left side. In view of the strong probability that the operation can be done on the same side but once, this, he remarks, is a very important question. He did the operation upon the left side, the vessels being injected with plaster and the rectum distended. He found that the rectum offered no such obstacle as is commonly supposed, and that the operation was as feasible upon one side as upon the other. After the operation the organ was carefully examined, and found in no way disturbed. In looking at its position this was readily accounted for; it lies behind the broad ligament. In entering and leaving the pelvic canal we cross the brim between the base of the broad ligament and the posterior surface of the bladder. This latter is about on a line

with the ilio-pectineal eminence, while the former is as far back as the synchondrosis; here is ample space for manipulation and extraction.

The important structures that Dr. Polk regards as most likely to suffer are the vessels going to the uterus through the broad ligaments. These, by being stretched and dragged upon in extraction, might be torn if the sides of the incision were not carefully supported in cases requiring powerful traction.

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Unsuccessful Porro Operation.

Dr. GERICHARD publishes an account of an unsuccessful Porro operation on a woman, aged 25 years, with dorsal cyphosis of the eighth vertebra, of inflammatory origin, dating from the age of six. The inferior strait of the pelvis was reduced in diameter to 4 centimetres. The uterus at term caused the abdominal walls to hang down like a wallet five fingers' breadth below the knees. Porro's operation was performed, and a healthy male child was extracted. The mother died on the third day without any peritoneal complication, but accompanied by meteorism, dyspnœa, and heart failure.—*Ann. de Gynecol.*, May, 1882.

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Extra-Uterine Fœtation treated by Antiseptic Abdominal Section; Recovery.

A paper on this subject was read by Mr. KNOWSLEY THORNTON, at the meeting of the Obstetrical Society of London, held April 5th.

The early history of the case was narrated at the March meeting of the Society. The author would divide cases of extra-uterine fœtation into three classes: 1. Those in which accurate diagnosis is possible. 2. Those in which probability, but not certainty, in diagnosis can be reached. 3. Those in which the nature of the case is not suspected until internal hemorrhage or other untoward accident takes place. In Cases 1 and 3 he thought it bad practice not to operate; in Case 2 an exploratory operation should be performed if the symptoms were urgent. But such operation should only be performed (1) under strict Listerian precautions, and (2) by a surgeon of special experience in abdominal section, for they were extremely difficult.

Dr. ROUTH said that wherever there was a growing abdominal tumour, and a complete decidua was voided per vaginam, the diagnosis of extra-uterine fœtation might be made. The successful removal of the placenta in this case was due to its hypertrophied condition. Possibly the placental souffle might have been heard.

Dr. ROGERS said that the souffle heard over fibroids was not so marked as that of the placenta. He thought the presence of milk in the breasts would aid diagnosis.

The PRESIDENT drew attention to the persistent life of the placenta after fœtal death, and its great hypertrophy. He did not believe the souffle was placental; he called it uterine. The discharge of an entire decidua was a valuable diagnostic aid. He remembered a case in which such a decidua was passed; rupture of the sac and internal hemorrhage took place. After a few days he evacuated the hæmatocele per vaginam and found chorionic villi in the fluid. The patient did well. Nowadays he would have had laparotomy done to get the bleeding stopped.

Mr. THORNTON said the souffle was not heard; had it been it would have to him strengthened the diagnosis of fibroid. The case narrated by the President was a very rare one. He thought that now abdominal section would be attended with less risk than the course followed.—*Lancet*, April 22, 1882.

Storage and the Utilization of the Phosphates in Pregnancy.

In a recent number of the *Union Médicale*, Dr. DELATTRE discusses a phenomenon of early pregnancy which he considers has not hitherto received the attention which, both on physiological and therapeutical grounds, it deserves. He refers to the almost complete disappearance of the phosphates from the urine. These salts, he says, are, except the small proportion as yet required by the development of the fœtus, either stored up in the maternal bones, which increase in weight and density, or, occasionally, deposited on their surface in the form of osteophytes, which have long been looked on as errors of nutrition. In the later months, when the fœtal bones are growing and ossifying rapidly, these reserves are drawn on, and the osteophytes, if present, disappear. The absorption is not complete at the time when the child is born, but goes on during the normal duration of lactation supplying phosphates to the milk. Such is the course of events in the case of a healthy and well-nourished woman: if, on the other hand, she be weakly and ill-fed, she is compelled, instead of laying up and subsequently employing a reserve of phosphates, to draw on her own tissues for the supply, which, after all, is insufficient for the wants of her child, who is consequently puny, rickety, and late in dentition. These considerations suggested to him the administration of phosphates in the most easily assimilated form to the mother during the whole period of pregnancy; and this treatment was in nine cases out of ten followed by the best results. In one instance, out of four children, the first two were feeble in mind and body, with enlarged glands, soft bones, pale complexion, etc.; but the last two, though born after the mother had been further reduced by anxiety and a nervous malady, were robust, rosy, and boisterous. This he attributes solely to the employment during the last two pregnancies of the treatment mentioned. Again, the first two children of one of his colleagues did not cut their first teeth until more than eleven months of age, but the third, after the mother had been taking phosphate of lime, cut them without any disturbance of health at a few days over four months, and was in every respect stronger and healthier than the older ones. He also believes that he has seen a marked amelioration in the vomiting and other nervous derangements accompanying pregnancy in the cases in which he has adopted this mode of treatment.—*Med. Times and Gaz.*, April 15, 1882.

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Hydrorrhœa during Pregnancy.

M. QUEIREL has published in the *Marseille Méd.* an interesting memoir, in which he studies the various elements of the still debated question of the nature of the watery discharges frequently occurring during pregnancy, and spoken of under the generic name of hydrorrhœa. He relates first two cases. In one, a multipara, six months advanced in pregnancy, there had been two effusions of colourless fluid. He was called after the third, which occurred during the night without conscious pain. From the odour, the marks on the linen, and the abundance of the loss, he had no doubt that this was a flow of amniotic fluid, although there was no commencing miscarriage. With prolonged repose and laudanum injections, the patient went on satisfactorily to full time, and was delivered of a healthy child. In the second case, a similar loss occurred at the fourth month, accompanied by abdominal pain and uterine colic. Rest and laudanum injections relieved the pain and arrested the loss. Similar phenomena reappeared and disappeared at the end of five weeks, but fifteen days afterwards the discharge recurred and was followed by abortion. The fœtus was six months old and well developed. M. Queirel points out that cases are reported under the

name of hydrorrhœa which are of certainly different natures, and include the flow of fluids of a very different aspect, nature, and origin from amniotic fluid. In some cases, there is a rupture of the membranes from injury or severe contraction, chiefly occurring during the night. This form of rupture is usually followed by labour from six to nine weeks afterwards. The discharge in these cases should be called hydramniorrhœa. When the liquid which escapes presents somewhat of the character of the amniotic fluid and the flow is reproduced at regular intervals, and the pregnancy continues its regular course, the case is probably one of true hydrorrhœa; that is to say, a flow of serous fluid secreted by the maternal vessels and the external surface of the ovum. This is the theory of Naegelé. Exceptionally, the possibility may be admitted of a fluid furnished by an accidental cyst, by a twin ovum of which the product has been dissolved, or by the uterine glands of the cervix, true catarrh of the cervix. Finally, cases may be diagnosed which may be confounded with these, and are not the least important; that is to say, cases of incontinence of urine, or of vesico-vaginal fistula, and cases in which the fluid may come from the vulvar glands. The mistake of confounding the flow with escape of urine has, especially, often been committed. The following case observed by Magail deserves to be related as an example. A woman, in her first pregnancy, several times had watery discharges; she was, however, delivered at full term of a living child, and the hydrorrhœa continued after pregnancy. In the second pregnancy the flow did not cease, and it was verified by several physicians whom she consulted. M. Depaul himself treated her for chronic affection of the uterus, and discovered only after several weeks of treatment that the fluid was furnished by the bladder. There was not, however, any vesico-vaginal fistula, but the anterior wall of the vagina was relaxed and ruptured on the middle of the vulva. There was a vaginal cystocele, with depression of the uterus. M. Magail relieved the infirmity by raising the uterus with the aid of tampons immersed in astringent fluid.—*London Medical Record*, March 15, 1882.

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Syphilis in Pregnancy and its Effects on the Offspring.

In this paper, Prof. VON HECKER, of Munich, gives an account of 173 cases of childbirth in connection with syphilis (*Wiener Medizin. Blätter*, 1881, No. 37). The cases are divided into four groups. The first includes cases, 81 in number, in which the mother at the time of her confinement was suffering from active syphilis which had not been treated. Broad condylomata about the anus and on the labia, or ulcers of the fossa navicularis, were usually present, but general signs of syphilis were very rarely found. Of these children, 46 were born at term; 35 were premature or stillborn; 46 children were free from signs of syphilis at birth, and remained so during their stay in the lying-in hospital. On the other hand, 25 children were born in a macerated condition, without any syphilitic lesions of the internal organs. The placenta, however, was frequently increased in weight. In seven cases the children showed specific lesions, such as pemphigus, or syphiloma of the internal organs; while in three, death was ascribed to non-syphilitic causes.—Group 2 comprises cases in which the mother's syphilis had been treated, usually in hospital, for a shorter or longer period. In the 32 cases of this kind, a similar effect was produced on the offspring as in group 1; 14 children were born at term, and 18 prematurely; 11 were quite healthy; 9 dead and rotten; 4 bore signs of syphilis; and 8 were weakly, but not specially diseased.—Group 3 contains 7 cases of old syphilis; 2 of the children were born healthy; 4 with signs of syphilis; and 1 was in a weakly condition.—Group 4 consists of 53 cases in which, in spite of the most careful examination, no trace of syphilis was discovered in the mother. Consequently, in the opinion of the author, the children derived

syphilis from the fathers. The 53 births produced 55 children (two being cases of twins). The fœtuses only reached maturity in very rare instances, and the majority were much below the normal weight. Thus, 23 weighed between 4 and 5 pounds, and 48 between 3 and 6 pounds. Only 2 were born in a state of maceration. But 18 were born dead; 12 died within twelve hours after birth; and 16 during the eleven following days, leaving only 9 who survived. Pemphigus was noticed 41 times, and in most cases was present at birth. Affections of the lungs were observed in 31 cases, under the form of white lobular pneumonia in 18, and of syphiloma in 14. Abscess of the thymus was noted 16 times; and syphilitic disease of the liver 14 times, always in the form described by von Barensprung. In 12 cases there was induration of the pancreas, which was considerably enlarged, and of cartilaginous hardness. Section of the organ was difficult, and was attended by a grating sound, similar to that produced in cutting through scirrhus. The spleen was enlarged in 10 cases; the suprarenal bodies were indurated in 8; the brain was affected in 3; and peritonitis was found in 3 cases. These facts support the author's opinion that, in most cases of inherited syphilis of the internal organs, the father is the source of the disease.—*Lond. Med. Record*, Jan. 15, 1882.

On the Menstrual Wave.

From an interesting paper on this point, Dr. Wm. Stephenson concludes:—

1. That the menstrual life is associated with a well-marked wave of vital energy which manifests itself in the temperature of the body, in the daily amount of excretion of urea, and to a slighter extent in the pulse rate.

2. That the cycle of changes takes a true wave form, divisible as to time into two nearly equal parts, the one below, the other above, the average for the whole period.

3. That the length of this wave varies in different individuals, and may vary also in the same person. The urea wave and the temperature wave are equal in length in the same case.

4. That menstruation does not correspond with the apex (or "climax") of the waves, but occurs five or six days after the decline has begun. It is probable that normally it occurs when the temperature curve reaches the mean; this was the case in nine out of ten menstruations. The flow or evacuation cannot be regarded as the cause of the decline.

5. That the temperature wave is the most uniform and gradual in its rise and fall. In the urea curve, the transition to elevation takes place more quickly, even suddenly; in one case it rose in twenty-four hours from —15 to +15 per cent.

6. That the temperature wave and urea wave are independent of each other; for whilst in one case they are exactly synchronous, in the other, the urea wave is four days in advance of the temperature wave.

7. That whilst the pulse wave is not so marked in character, it also shows a decided influence; it is depressed after menstruation, and manifests a distinct rise some days before the next period.

8. In all the waves there are evidences of secondary waves. This is seen in the temperature just after the rise above the mean, and the explanation of the irregularity in certain cases may be that this secondary wave is separated from the primary, and stands out more distinctly. The sudden elevation which characterizes the urea wave may be due to the influence of two waves. From a different analysis of the pulse curve, he is inclined to believe that it has an independent wave of from five to six days' duration, and on this wave is superimposed the menstrual wave which causes the depression and elevation already noticed.—*Amer. Journ. of Obstet.*, April, 1882.

Retention of Menstrual Fluid in One-half of a Double Uterus.

At the meeting of the Obstetrical Society, held February 1, Dr. GALABIN related the case of a patient, aged fifteen, who was brought by her mother for consultation for symptoms exactly resembling those of ordinary severe spasmodic dysmenorrhœa. No swelling or tumour had been noticed. Menstruation was fairly regular, and rather profuse. The pain was felt chiefly during the flow, was intermittent, agonizing in severity, and led to retching and hysterical manifestations. On examination, a firm globular swelling, without any fluctuation or elasticity, about as large as the uterus at three months and a half pregnancy, was felt through the anterior vaginal wall. The os was difficult to discover, and was displaced backwards and flattened antero-posteriorly. The patient was so hyperæsthetic that it was impossible to attempt to use the sound. The author rejected the hypothesis of fibroid tumour on account of the patient's youth, and the commencement of the symptoms with puberty, and felt sure that menstrual fluid would not accumulate to any amount in the uterus if there were any exit whatever through the cervix. He therefore diagnosed retention in one-half of a double uterus. It was agreed with Dr. Stirling, of Grangeroad, under whose care the patient had been, that an anæsthetic should be given, and the swelling evacuated if the diagnosis appeared to be confirmed on use of the sound. Under anæsthetics it was found that the sound passed easily to the normal length, going rather towards the right side, and the os appeared to be displaced a little to the right. The swelling was then punctured, and the usual treacly fluid, seen in cases of retained menses, began to escape. The opening was enlarged with scalpel and director, till it easily admitted the finger, and about ten ounces of fluid escaped. No injection was used on the spot, but it was intended to commence antiseptic injections, after allowing a few hours for complete escape of the fluid. The extreme hyperæsthesia and hysterical resistance of the patient, however, made it impossible to do more than syringe the vagina. Discharge of sanguineous fluid was free up to the third day, but it then almost stopped, and what there was became offensive. Next day febrile symptoms set in, the temperature rising to 104.6°, pulse to 140. The patient's friends refused to allow an anæsthetic to be given to wash out the uterus until the seventh day, when the author saw her again. There was then still high fever, but no sign of peritonitis. An anæsthetic having been given, the opening into the left half of the uterus was again enlarged, and the cavity washed out with solution of absolute phenol, 1 in 40. Considerable improvement followed up to the twelfth day, although it still proved to be impossible to do more than syringe the vagina, and little doubt was felt about the patient's recovery. On the twelfth day she was suddenly attacked with violent pain in the abdomen and collapse, and died in about twelve hours. The author thought that the symptoms pointed to rupture either of the Fallopian tube or of some abscess in the neighbourhood.

Dr. GRAILY HEWITT'S experience had led him to the conclusion that it was safer, in performing the operation for retained menses, to make a small opening and allow gradual escape of fluid, and gradual contraction of the walls of the cavity, which were often weak and thin. If allowed to discharge itself too quickly a suction might afterwards be exercised, and septic material drawn in.

Dr. GERVIS thought that Dr. Galabin had himself pointed out what would have been the most useful addition to the conduct of the case, the washing out with antiseptic fluid the uterine cavity. He agreed with Dr. Hewitt as to the importance of moderately slow evacuation, but with antiseptic precautions, thinking that the danger was less through any uterine suction than through decomposition of unremoved fluid.

Dr. Wynn Williams differed from Dr. Graily Hewitt in that he had made a very free opening, to get rid of all the menstrual fluid at once. He would have syringed out the uterus with a solution of iodine, which he believed the safest and best antiseptic. He would also have avoided making a second incision, any septic condition being present.

Dr. Champneys had seen a case of retained menses in one-half of a double uterus, under Dr. Winckel, of Dresden. In this slow evacuation did not prevent a fatal result, which was caused by the retraction of the uterus from an adhesion, which tore a hole in the thin uterine wall. Death resulted from septic peritonitis.

Dr. Cleveland was surprised at the fear expressed as to the use of carbolic acid injections. In chronic inflammation of the bladder he had used injections of absolute phenol, 1 in 50 or 60 of water, with excellent results.

Dr. Carter agreed with what had been said as to the dangerous results which had at times followed the injection of a solution of carbolic acid into the uterus. He related the case of a patient who was for some time in a very critical state after washing out the uterus the third day after a miscarriage with a solution of the strength of 1 in 80.

Dr. Malins thought there was some doubt about Dr. Galabin's diagnosis in the absence of an autopsy. The symptoms and physical state did not seem inconsistent either with an anterior hæmatocele or thrombus in the cellular tissue. He had met with similar cases in which the difficulty in insuring drainage and disinfection had been overcome by using a winged catheter with the end cut off. He thought nothing better than tincture of iodine for disinfection.

Dr. Routh could not agree with Dr. Hewitt in his advice to make a small opening. Experience proved that it often closed, and occasionally was followed by fatal symptoms. His own plan was to draw off by a large aspirator, and to inject iodine solution, doing this morning and evening, and keeping in a drainage-tube.

Dr. Matthews Duncan remarked that he, in cases of retained menses, made a free opening and allowed the fluid to drain away, using no injection of any kind. He had in a considerable experience had no fatal case or evil result, and he believed he had observed injurious consequences of the injection of plain warm water in cases which he had witnessed.

Dr. Galabin thought that the plan of gradual evacuation was desirable when the quantity of retained fluid was large, but not when it was small or moderate. He did not think the fatal result in his case could be attributed to the injection of carbolic acid, or even to the second incision; for a marked improvement had followed that proceeding, and continued for at least four days. He did not believe the case could have been one of hæmatocele, for the swelling had been perfectly movable, and he did not think that the contents of a hæmatocele ever so perfectly resembled the uniform treacly fluid seen in cases of retained menses. —*Lancet*, March 11, 1882.

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Unilateral Vaginal Oöphorectomy.

Dr. Braithwaite, of Leeds, read a paper on the above subject at the meeting of the Obstetrical Society of London, on April 5th.

Case 1. The patient, aged 30, was the wife of a workman. She suffered from attacks of dyspnœa, which were brought on by exertion, and which could only be relieved by certain very peculiar positions of the body. There was a mitral murmur: the patient was pale, and in wretched general health, and the muscle of the heart probably extremely feeble. Menstruation was normal. There was a prolapsed ovary, pressure on which did not bring on the dyspnœa, but caused much

pain. The diagnosis was that the dyspnœa was cardiac, but in some way excited by a prolapsed and very tender ovary. In no other way could the relief by posture be explained. The prolapsed ovary was removed, with the result that the dyspnœa was nearly but not completely cured.

Case 2. The wife of a miner, aged twenty-two, a healthy-looking woman. She had always been very hysterical. She suffered from constant pain in the left ovarian region, dating from the birth of her first child three years and a half previously, since which time she had never been free from it, except during the last three months of her succeeding pregnancies, three in number. The left ovary was prolapsed behind the uterus, and exquisitely tender. It was removed, with the result of complete cure. The author believed that the vaginal method of oöphorectomy was the best and simplest for ovaries which were prolapsed or non-adherent.

Dr. ROBERT BARNES regretted that the attitude assumed by London surgeons towards those who practised obstetrics seriously obstructed the progress of this branch of surgery. All great improvements in surgery were largely due to a spirit of enterprise, it might be said of experimental research. He thought that Battey's operation had now emerged from the doubtful domain of experimental surgery, and that we should soon arrive at definite conclusions as to the scope of its application. In a case in which, six months ago, he had removed the ovaries, the fibroid which formed the immediate cause of suffering had almost shrunk away. There was a proclivity, from anatomical reasons, to prolapsus and disease of the left ovary rather than the right. He inquired if the Fallopian tube had been removed. This question was of physiological as well as surgical interest.

Dr. HICKINBOTHAM thought that in Dr. Braithwaite's first case there was a large amount of hysteria. He attributed some of the relief obtained to the rest and other therapeutic means incident to hospital treatment. He asked what amount of small cysts indicated disease, and what symptoms did they produce? They were seen in ovaries removed for widely different conditions.

Dr. HEYWOOD SMITH said that the interest of the cases would be enhanced if the condition of the patients was reported in six or twelve months; for Battey found that when one ovary only was removed the pain was apt to recur. He thought the abdominal operation preferable in single women; but the incision should be three or four inches in length. The ovaries he had removed he had found diseased. He had no doubt that the operation in proper cases was destined to be of the greatest service.

Mr. KNOWSLEY THORNTON thought it still an open question whether oöphorectomy was justifiable for ovarian pain; but there was a great field for it for hemorrhage from fibroids. Accumulated statistics showed that abdominal oöphorectomy was a very safe operation, but that vaginal oöphorectomy was not. He did not think London was behindhand in abdominal surgery.

Dr. GERVIS did not think that the decision as to the advisability of this operation should be influenced by the possibility of a subsequent recurrence of hysteria. In the cases in which he had performed it for local suffering the result had proved its utility.

Dr. MATTHEWS DUNCAN was not opposed to oöphorectomy; but he could not adopt the theory implied in the first case read. To remove one ovary as a treatment of cardiac dyspnœa he regarded as a wild proceeding; nor could he imagine that it would ever come within the range of rational medicine.

Dr. BRAITHWAITE had removed part of the Fallopian tube in the second case, not in the first. He had secured the pedicles with strong catgut, and united the vaginal wound with one suture only at its lower third. He did not think there

was any element of hysteria in these cases. The relief to the dyspnœa in Case 1 by the peculiar positions described showed that it was not altogether cardiac. Since the paper had been sent in he had heard that the patient was now suffering from cardiac dropsy. Had the operation been done earlier the result might have been better.—*Lancet*, April 22, 1882.

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

The Mechanism of Death from Chloroform.

A discussion is now proceeding at the Paris Académie de Médecine on the dangers of chloroform, and the most noteworthy contribution which it has elicited is a statement by M. VULPIAN of certain teachings of experiment on the subject. The lessons are by no means reassuring to those who look on chloroform with grave suspicion. The danger of death is shown by experiment to be present at the commencement, during the course, or at the end of the chloroformization, and even sometimes for some hours or days subsequently. The occasional cases of death immediately after the commencement of inhalation receive their explanation from experiment. In healthy animals respiration may be at once arrested by pinching the superior laryngeal nerves, and even by a strong sensory impression. Thus, if chloroform is merely applied to the nostrils of an animal, respiration is sometimes arrested. The medulla oblongata has been thought unaffected by the inhalation of chloroform; but, although resisting the influence of chloroform longer than other parts of the nervous system, it is unquestionably affected, in some degree, even in moderate anæsthesia. If the pneumogastric nerves are divided in a healthy animal, it continues to breathe. Stimulation of the central ends then arrests respiration, which recommences, even though the peripheral extremities are faradized. But if the same experiment is performed on an animal under the influence of chloral or of chloroform, the breathing does not recommence after it has been arrested by stimulation of the divided pneumogastrics. This shows that in the anæsthetic state the medulla oblongata is in a functional condition different from its normal state. Again, in an animal under normal conditions, faradization of the peripheral ends of the divided pneumogastrics arrests the heart in diastole; but if the stimulation is continued, the contractions recommence. If the same experiment is performed on an animal under the influence of chloroform, the arrest of the heart is more readily produced, and is final. Hence chloroform acts on the respiratory centres; but it acts also upon the motor ganglia of the heart. In animals the cardiac failure is much more grave than the respiratory failure; life cannot be saved in more than one in forty of the former, although in the more frequent cases of respiratory failure life can often be preserved by artificial respiration. M. Vulpian fully confirms the slighter degree of danger involved in the use of ether, in consequence of which he invariably prefers it as a means of obtaining anæsthesia in experiments on animals.—*Lancet*, April 8, 1882.

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At the meeting of the Obstetrical Society, held February 1, Dr. GALABIN related the case of a patient, aged fifteen, who was brought by her mother for consultation for symptoms exactly resembling those of ordinary severe spasmodic dysmenorrhœa. No swelling or tumour had been noticed. Menstruation was fairly regular, and rather profuse. The pain was felt chiefly during the flow, was intermittent, agonizing in severity, and led to retching and hysterical manifestations. On examination, a firm globular swelling, without any fluctuation or elasticity, about as large as the uterus at three months and a half pregnancy, was felt through the anterior vaginal wall. The os was difficult to discover, and was displaced backwards and flattened antero-posteriorly. The patient was so hyperæsthetic that it was impossible to attempt to use the sound. The author rejected the hypothesis of fibroid tumour on account of the patient's youth, and the commencement of the symptoms with puberty, and felt sure that menstrual fluid would not accumulate to any amount in the uterus if there were any exit whatever through the cervix. He therefore diagnosed retention in one-half of a double uterus. It was agreed with Dr. Stirling, of Grangeroad, under whose care the patient had been, that an anæsthetic should be given, and the swelling evacuated if the diagnosis appeared to be confirmed on use of the sound. Under anæsthetics it was found that the sound passed easily to the normal length, going rather towards the right side, and the os appeared to be displaced a little to the right. The swelling was then punctured, and the usual treacly fluid, seen in cases of retained menses, began to escape. The opening was enlarged with scalpel and director, till it easily admitted the finger, and about ten ounces of fluid escaped. No injection was used on the spot, but it was intended to commence antiseptic injections, after allowing a few hours for complete escape of the fluid. The extreme hyperæsthesia and hysterical resistance of the patient, however, made it impossible to do more than syringe the vagina. Discharge of sanguineous fluid was free up to the third day, but it then almost stopped, and what there was became offensive. Next day febrile symptoms set in, the temperature rising to 104.6°, pulse to 140. The patient's friends refused to allow an anæsthetic to be given to wash out the uterus until the seventh day, when the author saw her again. There was then still high fever, but no sign of peritonitis. An anæsthetic having been given, the opening into the left half of the uterus was again enlarged, and the cavity washed out with solution of absolute phenol, 1 in 40. Considerable improvement followed up to the twelfth day, although it still proved to be impossible to do more than syringe the vagina, and little doubt was felt about the patient's recovery. On the twelfth day she was suddenly attacked with violent pain in the abdomen and collapse, and died in about twelve hours. The author thought that the symptoms pointed to rupture either of the Fallopian tube or of some abscess in the neighbourhood.

Dr. GRAILY HEWITT'S experience had led him to the conclusion that it was safer, in performing the operation for retained menses, to make a small opening and allow gradual escape of fluid, and gradual contraction of the walls of the cavity, which were often weak and thin. If allowed to discharge itself too quickly a suction might afterwards be exercised, and septic material drawn in.

Dr. GERVIS thought that Dr. Galabin had himself pointed out what would have been the most useful addition to the conduct of the case, the washing out with antiseptic fluid the uterine cavity. He agreed with Dr. Hewitt as to the importance of moderately slow evacuation, but with antiseptic precautions, thinking that the danger was less through any uterine suction than through decomposition of unremoved fluid.

Dr. Wynn Williams differed from Dr. Graily Hewitt in that he had made a very free opening, to get rid of all the menstrual fluid at once. He would have syringed out the uterus with a solution of iodine, which he believed the safest and best antiseptic. He would also have avoided making a second incision, any septic condition being present.

Dr. Champneys had seen a case of retained menses in one-half of a double uterus, under Dr. Winckel, of Dresden. In this slow evacuation did not prevent a fatal result, which was caused by the retraction of the uterus from an adhesion, which tore a hole in the thin uterine wall. Death resulted from septic peritonitis.

Dr. Cleveland was surprised at the fear expressed as to the use of carbolic acid injections. In chronic inflammation of the bladder he had used injections of absolute phenol, 1 in 50 or 60 of water, with excellent results.

Dr. Carter agreed with what had been said as to the dangerous results which had at times followed the injection of a solution of carbolic acid into the uterus. He related the case of a patient who was for some time in a very critical state after washing out the uterus the third day after a miscarriage with a solution of the strength of 1 in 80.

Dr. Malins thought there was some doubt about Dr. Galabin's diagnosis in the absence of an autopsy. The symptoms and physical state did not seem inconsistent either with an anterior hæmatocele or thrombus in the cellular tissue. He had met with similar cases in which the difficulty in insuring drainage and disinfection had been overcome by using a winged catheter with the end cut off. He thought nothing better than tincture of iodine for disinfection.

Dr. Routh could not agree with Dr. Hewitt in his advice to make a small opening. Experience proved that it often closed, and occasionally was followed by fatal symptoms. His own plan was to draw off by a large aspirator, and to inject iodine solution, doing this morning and evening, and keeping in a drainage-tube.

Dr. Matthews Duncan remarked that he, in cases of retained menses, made a free opening and allowed the fluid to drain away, using no injection of any kind. He had in a considerable experience had no fatal case or evil result, and he believed he had observed injurious consequences of the injection of plain warm water in cases which he had witnessed.

Dr. Galabin thought that the plan of gradual evacuation was desirable when the quantity of retained fluid was large, but not when it was small or moderate. He did not think the fatal result in his case could be attributed to the injection of carbolic acid, or even to the second incision; for a marked improvement had followed that proceeding, and continued for at least four days. He did not believe the case could have been one of hæmatocele, for the swelling had been perfectly movable, and he did not think that the contents of a hæmatocele ever so perfectly resembled the uniform treacly fluid seen in cases of retained menses. —*Lancet*, March 11, 1882.

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Unilateral Vaginal Oöphorectomy.

Dr. Braithwaite, of Leeds, read a paper on the above subject at the meeting of the Obstetrical Society of London, on April 5th.

Case 1. The patient, aged 30, was the wife of a workman. She suffered from attacks of dyspnœa, which were brought on by exertion, and which could only be relieved by certain very peculiar positions of the body. There was a mitral murmur: the patient was pale, and in wretched general health, and the muscle of the heart probably extremely feeble. Menstruation was normal. There was a prolapsed ovary, pressure on which did not bring on the dyspnœa, but caused much

pain. The diagnosis was that the dyspnœa was cardiac, but in some way excited by a prolapsed and very tender ovary. In no other way could the relief by posture be explained. The prolapsed ovary was removed, with the result that the dyspnœa was nearly but not completely cured.

Case 2. The wife of a miner, aged twenty-two, a healthy-looking woman. She had always been very hysterical. She suffered from constant pain in the left ovarian region, dating from the birth of her first child three years and a half previously, since which time she had never been free from it, except during the last three months of her succeeding pregnancies, three in number. The left ovary was prolapsed behind the uterus, and exquisitely tender. It was removed, with the result of complete cure. The author believed that the vaginal method of oöphorectomy was the best and simplest for ovaries which were prolapsed or non-adherent.

Dr. ROBERT BARNES regretted that the attitude assumed by London surgeons towards those who practised obstetrics seriously obstructed the progress of this branch of surgery. All great improvements in surgery were largely due to a spirit of enterprise, it might be said of experimental research. He thought that Battey's operation had now emerged from the doubtful domain of experimental surgery, and that we should soon arrive at definite conclusions as to the scope of its application. In a case in which, six months ago, he had removed the ovaries, the fibroid which formed the immediate cause of suffering had almost shrunk away. There was a proclivity, from anatomical reasons, to prolapsus and disease of the left ovary rather than the right. He inquired if the Fallopian tube had been removed. This question was of physiological as well as surgical interest.

Dr. HICKINBOTHAM thought that in Dr. Braithwaite's first case there was a large amount of hysteria. He attributed some of the relief obtained to the rest and other therapeutic means incident to hospital treatment. He asked what amount of small cysts indicated disease, and what symptoms did they produce? They were seen in ovaries removed for widely different conditions.

Dr. HEYWOOD SMITH said that the interest of the cases would be enhanced if the condition of the patients was reported in six or twelve months; for Battey found that when one ovary only was removed the pain was apt to recur. He thought the abdominal operation preferable in single women; but the incision should be three or four inches in length. The ovaries he had removed he had found diseased. He had no doubt that the operation in proper cases was destined to be of the greatest service.

Mr. KNOWSLEY THORNTON thought it still an open question whether oöphorectomy was justifiable for ovarian pain; but there was a great field for it for hemorrhage from fibroids. Accumulated statistics showed that abdominal oöphorectomy was a very safe operation, but that vaginal oöphorectomy was not. He did not think London was behindhand in abdominal surgery.

Dr. GERVIS did not think that the decision as to the advisability of this operation should be influenced by the possibility of a subsequent recurrence of hysteria. In the cases in which he had performed it for local suffering the result had proved its utility.

Dr. MATTHEWS DUNCAN was not opposed to oöphorectomy; but he could not adopt the theory implied in the first case read. To remove one ovary as a treatment of cardiac dyspnœa he regarded as a wild proceeding; nor could he imagine that it would ever come within the range of rational medicine.

Dr. BRAITHWAITE had removed part of the Fallopian tube in the second case, not in the first. He had secured the pedicles with strong catgut, and united the vaginal wound with one suture only at its lower third. He did not think there

was any element of hysteria in these cases. The relief to the dyspnœa in Case 1 by the peculiar positions described showed that it was not altogether cardiac. Since the paper had been sent in he had heard that the patient was now suffering from cardiac dropsy. Had the operation been done earlier the result might have been better.—*Lancet*, April 22, 1882.

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

The Mechanism of Death from Chloroform.

A discussion is now proceeding at the Paris Académie de Médecine on the dangers of chloroform, and the most noteworthy contribution which it has elicited is a statement by M. VULPIAN of certain teachings of experiment on the subject. The lessons are by no means reassuring to those who look on chloroform with grave suspicion. The danger of death is shown by experiment to be present at the commencement, during the course, or at the end of the chloroformization, and even sometimes for some hours or days subsequently. The occasional cases of death immediately after the commencement of inhalation receive their explanation from experiment. In healthy animals respiration may be at once arrested by pinching the superior laryngeal nerves, and even by a strong sensory impression. Thus, if chloroform is merely applied to the nostrils of an animal, respiration is sometimes arrested. The medulla oblongata has been thought unaffected by the inhalation of chloroform; but, although resisting the influence of chloroform longer than other parts of the nervous system, it is unquestionably affected, in some degree, even in moderate anæsthesia. If the pneumogastric nerves are divided in a healthy animal, it continues to breathe. Stimulation of the central ends then arrests respiration, which recommences, even though the peripheral extremities are faradized. But if the same experiment is performed on an animal under the influence of chloral or of chloroform, the breathing does not recommence after it has been arrested by stimulation of the divided pneumogastrics. This shows that in the anæsthetic state the medulla oblongata is in a functional condition different from its normal state. Again, in an animal under normal conditions, faradization of the peripheral ends of the divided pneumogastrics arrests the heart in diastole; but if the stimulation is continued, the contractions recommence. If the same experiment is performed on an animal under the influence of chloroform, the arrest of the heart is more readily produced, and is final. Hence chloroform acts on the respiratory centres; but it acts also upon the motor ganglia of the heart. In animals the cardiac failure is much more grave than the respiratory failure; life cannot be saved in more than one in forty of the former, although in the more frequent cases of respiratory failure life can often be preserved by artificial respiration. M. Vulpian fully confirms the slighter degree of danger involved in the use of ether, in consequence of which he invariably prefers it as a means of obtaining anæsthesia in experiments on animals.—*Lancet*, April 8, 1882.

UNIVERSITY OF PENNSYLVANIA—MEDICAL DEPARTMENT.

Thirty-Sixth Street and Woodland Avenue (Darby Road), Philadelphia.

One Hundred and Seventeenth Annual Session, 1882-83.

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Matriculates who have not received a collegiate degree are required to pass a preliminary examination in English and Physics (for details of which see Catalogue), and to attend three graded winter courses of instruction of six months each, consisting of didactic lectures, clinical lectures, and practical work in laboratories and hospitals.

A VOLUNTARY FOURTH YEAR OR POST-GRADUATE COURSE, purely practical, has been established, for particulars of which see Catalogue.

The Lectures of the Winter Session of 1882-83 *will begin on Monday, October 2, and end on the last day of March.*

The Preliminary Course will begin on the second Monday in September.

In the *Spring Months* the laboratories of Chemistry, Pharmacy, Histology, Physiology, and Pathology are open, and the post-graduate chemical course is continued.

FEES IN ADVANCE.—Matriculation $5. For each session, including dissections, operating, and bandaging, $150. No graduation fee.

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BURNETT ON THE EAR—Lately Issued.

THE EAR: ITS ANATOMY, PHYSIOLOGY AND DISEASES. A Practical Treatise for the use of Medical Students and Practitioners. By CHARLES H. BURNETT, M.A., M.D., Aural Surgeon to the Presbyterian Hospital; Surgeon in Charge of the Infirmary for Diseases of the Ear, Philadelphia. In one very handsome octavo volume of 619 pages, with 87 illustrations. Cloth, $4 50; leather, $5 50; half Russia, raised bands, $6.

On account of the great advances which have been made of late years in otology, and of the increased interest manifested in it, the medical profession will welcome this new work which presents clearly and concisely its present aspect, while clearly indicating the direction in which further researches can be most profitably carried on. Dr. Burnett has produced a work which as a text-book stands *facile princeps* in our language. To the specialist the work is of the highest value, and his sense of gratitude to Dr. Burnett will, we hope, be proportionate to the amount of benefit he can obtain from the careful study of the book, and a constant reference to its trustworthy pages.—*Edinburgh Medical Journal*, August, 1878.

THE NATIONAL DISPENSATORY—Second Edition—Now Ready.

THE NATIONAL DISPENSATORY; CONTAINING THE NATURAL HISTORY, CHEMISTRY, PHARMACY, ACTIONS AND USES OF MEDICINES, including those recognized in the Pharmacopœias of the United States, Great Britain and Germany, with numerous references to the French Codex. By ALFRED STILLÉ, M.D., LL.D., Professor of the Theory and Practice of Medicine and of Clinical Medicine in the University of Pennsylvania, and JOHN M. MAISCH, Phar.D., Professor of Materia Medica and Botany in the Philadelphia College of Pharmacy, Secretary to the American Pharmaceutical Association. Second edition, thoroughly revised, with numerous additions. In one very handsome volume of 1692 pages, with 239 illustrations. Extra cloth, $6.75; leather, raised bands, $7.50; half Russia, raised bands and open back, $8 25.

The National Dispensatory is beyond dispute the very best authority. It is throughout complete in all the necessary details, clear and lucid in its explanations, and replete with references to the most recent writings, where farther particulars can be obtained, if desired. Its value is greatly enhanced by the extensive indexes—a general index of Materia Medica, etc., and also an index of Therapeutics. It would be a work of supererogation to say more about this well known work. No practising physician can afford to be without the National Dispensatory.—*Canada Medical and Surgical Journal*, February, 1880.

THE

JEFFERSON MEDICAL COLLEGE

OF PHILADELPHIA.

THE Fifty-eighth Session of the Jefferson Medical College will begin on Monday, October 2d, 1882, and will continue until the end of March, 1883. Preliminary Lectures will be held from Monday, 11th of September.

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The recent enlargement of the College has enabled the Faculty to perfect the system of *Practical Laboratory Instruction*, in all the Departments. Rooms are assigned in which each Professor, with his Demonstrators, instructs the Class, in Sections, in direct observation and hand-work in the Chemical, Pharmaceutical, Physiological, and Pathological Laboratories. Operative and Minor Surgery, and investigation of Gynæcological and Obstetric conditions on the *Cadaver*, are taught, as also Diagnosis of Disease on the living subject. The experience of the past Session has abundantly proven the great value of this Practical Teaching.

This course of Instruction is *free of charge, but obligatory upon* candidates for the Degree, except those who are Graduates of other Colleges of ten years' standing.

A SPRING COURSE of Lectures is given, beginning early in April, and ending early in June. There is no additional charge for this Course to matriculates of the College, except a registration fee of five dollars; non-matriculates pay forty dollars, *thirty five of which, however, are credited on the amount of fees paid for the ensuing Winter Course.*

CLINICAL INSTRUCTION is given *daily* at the HOSPITAL OF THE JEFFERSON MEDICAL COLLEGE throughout the year by Members of the Faculty, and by the Hospital Staff.

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Fees for a full course of Lectures to those who have attended two full courses at other (recognized) Colleges—the matriculation fee, and $70 00
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ELLERSLIE WALLACE, *Dean.*

BELLEVUE HOSPITAL MEDICAL COLLEGE,

CITY OF NEW YORK.

SESSIONS OF 1882–83.

The COLLEGIATE YEAR in this Institution embraces the Regular Winter Session and a Spring Session. The REGULAR SESSION will begin on Wednesday, September 20, 1882, and end about the middle of March, 1883. During this Session, in addition to four didactic lectures on every week-day except Saturday, two or three hours are daily allotted to clinical instruction. Attendance upon two regular courses of lectures is required for graduation. The SPRING SESSION consists chiefly of recitations from Text-Books. This Session begins about the middle of March, and continues until the middle of June. During this Session, daily recitations in all the departments are held by a corps of Examiners appointed by the Faculty. Short courses of lectures are given on special subjects, and regular clinics are held in the Hospital and in the College building.

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Fees for Students who have attended two full courses at other Medical Colleges, and for Graduates of less than three years' standing of other Medical Colleges	70 00
Matriculation Fee	5 00
Dissection Fee (including material for dissection)	10 00
Graduation Fee	30 00

No Fees for Lectures are required of Graduates of three years' standing, or of third-course Students who have attended their second course at the Bellevue Hospital Medical College.

FEES FOR THE SPRING SESSION.

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Recitations, Clinics and Lectures	40 00
Dissection (Ticket valid for the following Winter)	10 00

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UNIVERSITY OF THE CITY OF NEW YORK,

MEDICAL DEPARTMENT.

410 East Twenty-sixth St., opp. Bellevue Hospital, New York City.

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THE PRELIMINARY SESSION will begin on Wednesday, September 20, 1882, and end October 4, 1882. It will be conducted on the same plan as the Regular Winter Session.

THE REGULAR WINTER SESSION will begin October 4, 1882, and end about the middle of March, 1883. The Plan of Instruction consists of Didactic and Clinical Lectures, recitations and laboratory work in all subjects in which it is practicable. To put the laboratories on a proper footing a new building has been erected at an expense of thirty thousand dollars. It will contain laboratories fitted for instruction in Chemistry, Histology, Pathology, Materia Medica, Operative Surgery and Gynæcology.

Two to five Didactic lectures and two or more Clinical lectures will be given each day by members of the Faculty. In addition to the ordinary clinics, *special clinical instruction*, WITHOUT ADDITIONAL EXPENSE will be given to the candidates for graduation during the latter part of the Regular Session. For this purpose the candidates will be divided into sections of twenty five members each. All who desire to avail themselves of this valuable privilege must give in their names and pay their examination fee of $30 to the Dean during the first week in November. At these special clinics students will have excellent opportunity to make and verify diagnoses, and watch the effects of treatment. They will be held in the Wards of the Hospitals and at the Public and College Dispensaries.

Each of the seven professors of the Regular Faculty will conduct a recitation on his subject one evening each week. Students are thus enabled to make up for lost lectures, and prepare themselves properly for their final examinations without additional expense.

THE SPRING SESSION will begin about the middle of March and end the last week in May. The daily Clinics and Special Practical Courses will be the same as in the Winter Session, and there will be Lectures on Special Subjects by the Members of the Faculty.

It is supplementary to the Regular Winter Session. Nine months of continued instruction are thus secured to all students of the University who desire a thorough course.

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CHICAGO MEDICAL COLLEGE.

MEDICAL DEPARTMENT OF THE NORTHWESTERN UNIVERSITY.

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LESTER CURTIS, A.M., M.D.,
Professor of Histology.

F. C. SCHAEFER, M.D.,
Professor of Anatomy.

HENRY GRADLE, M.D.,
Professor of Physiology.

J. H. LONG, PH.D.,
Professor of General Chemistry.

O. C. DEWOLF, M.D.,
Professor of State Medicine and Hygiene.

WALTER HAY, M.D., LL.D.,
Professor of Materia Medica.

C. FENGER, M.D.,
Prof. of Pathology and Surgical Diseases of Genito-Urinary Organs.

I. N. DANFORTH, M.D.,
Professor of Clinical Medicine.

FRANK BILLINGS, M.D.,
Demonstrator of Anatomy.

The Collegiate Year in this Institution consists of a REGULAR AUTUMN AND WINTER SESSION, a special SESSION FOR PRACTITIONERS, and a SPRING SESSION. THE REGULAR SESSION begins September 26, 1882, and closes March 27, 1883.

This College was the first in the United States to adopt a graded system of instruction. All applicants for admission must possess at least a good English education, and present full evidence of the same. If an applicant has received the degree of A. B., or presents a certificate from some reputable Scientific School, High School, or Academy, no matriculation examination will be required; otherwise he must sustain a satisfactory examination before a committee of the Faculty. The students are divided into 1ST YEAR, 2D YEAR, and 3D YEAR CLASSES, instructions being given simultaneously in different lecture rooms. If students so elect, they can enter the 2d Year's Course if they have studied medicine for one year previously, and can sustain a satisfactory examination upon the studies embraced in the 1st Year's Course.

The Clinical advantages of this College, with the great number of Dispensary, College Clinic and Hospital patients, cannot be surpassed. All professors of practical branches are members of the staff of Mercy or Cook County Hospital, or other charities. For several sessions each senior student has had the privilege of attending upon one or more obstetrical cases, and of witnessing important obstetrical operations.

It is the aim of the Faculty to make all instruction in the College scientific and preeminently practical.

THE PRACTITIONERS' COURSE, designed for Practising Physicians only, was inaugurated in 1879. It has proven so satisfactory to all concerned that it will be continued and constitute a portion of each Collegiate year. This course will begin the day following the public Commencement exercises, and continue for four weeks, affording, by means of didactic and daily clinical instruction, special advantages to physicians for a rapid, yet thorough, practical review of the most important subjects in Medicine and Surgery. The SPRING SESSION consists of Recitations, Laboratory and Dispensary work, and Clinical and Didactic Lectures, beginning April 1, 1883, and closing June 1, 1883.

FEES FOR COLLEGIATE YEAR (except Practitioners' Course), $75. Registration Fee, $5. Demonstrator's Ticket, $5. Laboratory Ticket, $5. Mercy Hospital Ticket, $6. Final Examination Fee, $30. For Practitioners' Course, including Laboratory, Anatomical, and Hospital Tickets, $30.

For the Annual Announcement and Catalogue, or for any information relating to the College, address

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MIAMI MEDICAL COLLEGE OF CINCINNATI.

Session 1882-83.

The next term will commence September 30, 1882, preceded by a Preliminary Course from September 7th.

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Daily Clinics are held in the College Building, at which patients in all departments of Medicine and Surgery are treated, and students have opportunity to practise the various methods of examination and manipulation required by Modern Medicine.

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Hospital ticket	5 00
Dissection ticket	5 00
Graduation	25 00

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No. 329 W. 7th Street.

JOHN A. MURPHY, M.D., *Dean*,
No. 163 W. 7th Street.

SAINT LOUIS MEDICAL COLLEGE,

ST. LOUIS, MO.

FACULTY.

A. LITTON, M.D., Professor of Chemistry and Pharmacy.

J. B. JOHNSON, M.D., Professor of the Principles and Practice of Medicine.

E. H. GREGORY, M.D., Professor of the Principles and Practice of Surgery and Clinical Surgery.

J. T. HODGEN,* M.D., Professor of Surgical Anatomy, Special Fractures and Dislocations, and Clinical Surgery at the City Hospital.

J. S. B. ALLEYNE, M.D., DEAN, Professor of Therapeutics, Materia Medica, and Diseases of Children.

E. F. SMITH, M.D., Professor of Clinical Medicine and Pathological Anatomy.

L. CH. BOISLINIERE, M.D., Professor of Obstetrics.

G. BAUMGARTEN, M.D., Professor of Physiology.

H. H. MUDD, M.D., Professor of Anatomy, and Clinical Surgery at the City Hospital, and Demonstrator of Anatomy.

JOHN GREEN, M.D., Lecturer on Ophthalmology.

W. L. BARRET, M.D., Lecturer on Diseases of Women.

J. M. SCOTT, M.D., Lecturer on Clinical Medicine.

G. A. MOSES, M.D., Lecturer on Clinical Gynæcology.

N. B. CARSON, M.D., Assistant to the Chair of Surgery.

W. C. GLASGOW, M.D., Clinical Lecturer on Physical Diagnosis.

W. E. FISCHEL, M.D., Lecturer on Therapeutics.

J. FRIEDMAN, M.D., Demonstrator of Chemistry.

EDWARD EVERS, M.D., Lecturer on Histology.

R. LUEDEKING, M.D., Lecturer on Pathological Anatomy.

JOHN P. BRYSON, M.D., Lecturer on Diseases of the Genito-Urinary Organs.

W. A. McCANDLESS, M.D., } Ass't Demonstra-
FRANK R. FRY, M.D., } tors of Anatomy.

The Forty-first regular Session will begin on September 25th, 1882, and continue until March 1st, 1883.

The Spring Session of each year begins about the middle of March, and continues eleven weeks.

A Post-Graduate Course is held during the month of April.

EXAMINATION FOR ADMISSION.—Henceforth all students entering the College will be required to pass a satisfactory examination in the branches of a good English education, including English grammar, orthography and composition, mathematics and elementary physics. Students who present a diploma or certificate of graduation from a literary or scientific college, or a high school, shall be exempt from this preliminary examination.

The Course of Studies in this School extends over a period of three years, and is a graded one. This plan has been pursued with complete success for the past two years. The Curriculum is arranged as follows:—

FIRST YEAR (JUNIOR CLASS).—Chemistry—Chemical Laboratory Practice—Anatomy—Dissections—Histology—Physiology—Materia Medica.

SECOND YEAR (MIDDLE CLASS).—Chemistry—Anatomy—Dissections—Physiology—Materia Medica and Therapeutics—Pathological Anatomy—Surgical Anatomy—Fractures and Dislocations—Medical and Surgical Clinics—Principles and Practice of Medicine.

THIRD YEAR (SENIOR CLASS).—Dissections—Medicine—Surgery—Surgical Anatomy—Fractures and Dislocations—Ophthalmology—Obstetrics—Diseases of Women—Diseases of Children—Diseases of Genito-Urinary Organs—Medical, Surgical, Ophthalmic and Gynæcological Clinics.

The Spring Session (optional) embraces the usual Clinics, an Obstetric Out-Clinic, and Lectures on a number of special subjects.

Attendance on the three Courses of Lectures is one of the requirements of Graduation.

FEES.

Matriculation Fee	$5 00
Fee for each Regular Term	50 00
No extra charge is made for Demonstrator's, Laboratory or Hospital Tickets. The Fee for the Third Term includes the Graduation Fee.	
Fee for the Spring Session	25 00
For Students who remain through the ensuing Winter Session this sum will be deducted from the fee for the regular term.	
Laboratory Fee for Students who work during the Spring Session	10 00
Fee for the Post-Graduate Course	30 00

The Annual Announcement, and all further information, may be obtained from

J. S. B. ALLEYNE, M.D., *Dean*,
3132 Washington Avenue.

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* Deceased.

ATLANTA MEDICAL COLLEGE.

ATLANTA, GEORGIA.

The Twenty-fifth Annual Course of Lectures in this Institution will commence on Thursday, the 12th of October, 1882, and close on the 1st of March, 1883.

FACULTY.

A. W. GRIGGS, M.D., Emeritus Professor of Practice.

J. G. WESTMORELAND, M.D, Emeritus Professor of Materia Medica and Therapeutics.

W. F. WESTMORELAND, M.D, Professor of Principles and Practice of Surgery.

WM. ABRAM LOVE, M.D., Professor of Physiology.

V. H. TALIAFERRO, M.D., Professor of Obstetrics and Diseases of Women and Children.

W. S. ARMSTRONG, M.D., Professor of General and Descriptive Anatomy, Lecturer on Clinical Medicine.

A. W. CALHOUN, M.D., Professor of Diseases of the Eye, Ear, and Throat.

J. H. LOGAN, A.M., M.D., Professor of General and Medical Chemistry.

H. V. M. MILLER, M.D., LL.D., Professor of Principles and Practice of Medicine, Lecturer on Clinical Medicine, and Dean of the Faculty.

J. S. TODD, M.D., Professor of Materia Medica and Therapeutics, Lecturer on Clinical Medicine.

JAMES A. GRAY, M.D., Lecturer on Venereal Diseases, and Proctor.

D. H. HOWELL, M D., Lecturer on Minor Surgery.

C. A. WHITE, M.D, Demonstrator of Anatomy.

The Trustees and Faculty feel secure in presenting the claims of the Atlanta Medical College to those desiring a medical education. They are assured that many causes combine to render this city, of 50,000 people, the great medical centre of the South.

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Epidemics are unknown in this city. There is no malaria with us. Those who have been affected by this poison in other localities, find here a retreat in which they may recover their health. Students from the North or West may find here, while acquiring their education, protection from the dangers of a more rigorous climate without subjecting themselves to the risk of other diseases.

The climate is healthy and bracing, and well adapted for sustaining a student through the physical and mental strain of a course of medical lectures.

The Faculty avail themselves of every facility of clinical and didactic teaching. Not only does Atlanta, with a large proportion of inhabitants dependent on charity for medical attention, afford a vast amount of clinical material, but her central position and railroad facilities draw from a distance a great number of interesting cases that may be presented before the class.

The Faculty constantly and zealously labor to utilize all these advantages in placing the Atlanta Medical College among the foremost in imparting a THOROUGH AND PRACTICAL KNOWLEDGE of medical science in all its principles and details. They claim that its prosperous condition and constantly increasing classes for years past are the highest evidence of the achievement of this object.

☞ All business communications should be addressed to

Dr. JAMES A. GRAY,
Proctor, Atlanta Medical College.

MEDICAL DEPARTMENT OF THE UNIVERSITY OF LOUISIANA—NEW ORLEANS.

FACULTY.

T. G. Richardson, M.D., Professor of General and Clinical Surgery.

Samuel M. Bemiss, M.D., Professor of the Theory and Practice of Medicine and Clinical Medicine.

Stanford E. Chaillé, M.D., Professor of Physiology and Pathological Anatomy.

Joseph Jones, M.D., Professor of Chemistry and Clinical Medicine.

Samuel Logan, M.D., Professor of Anatomy and Clinical Surgery.

Ernest S. Lewis, M.D., Professor of General and Clinical Obstetrics and Diseases of Women and Children.

John B. Elliott, M.D., Professor of Materia Medica and Therapeutics, and Hygiene.

Albert B. Miles, Demonstrator of Anatomy.

The next annual course of instruction in this Department (now in the forty-ninth year of its existence) will commence on Monday, the 16th day of October, 1882, and terminate on Saturday, the 24th day of March, 1883. The first three weeks of the term will be devoted exclusively to Clinical Medicine and Surgery at the Charity Hospital; Practical Chemistry in the Laboratory; and dissections in the spacious and airy Anatomical Rooms of the University.

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The Act establishing the University of Louisiana gives the Professors of the Medical Department the use of the great Charity Hospital as a school of practical instruction.

The Charity Hospital contains nearly 700 beds, and received, during the last year, *more than six thousand* patients. Its advantages for professional study are unsurpassed by any similar institution in this country. The Medical, Surgical, and Obstetrical Wards are visited by the respective professors in charge daily, from eight to ten o'clock A. M., at which time all the students are expected to attend and familiarize themselves, *at the bedside of the patients*, with the diagnosis and treatment of all forms of injury and disease.

The regular lectures at the hospital, on Clinical Medicine by Professors Bemiss and Joseph Jones, Surgery by Professors Richardson and Logan, Diseases of Women and Children by Professor Lewis, and Special Pathological Anatomy by Professor Chaillé, will be delivered in the amphitheatre on Monday, Wednesday, Thursday, and Saturday, from 10 to 12 o'clock A. M.

The administrators of the hospital elect annually, by competitive examinations, *fourteen resident students*, who are maintained by the institution.

TERMS.

For the Tickets of all the Professors	$140 00
For the Ticket of Practical Anatomy	10 00
Matriculation Fee	5 00
Graduation Fee	30 00

Candidates for graduation are required to be twenty-one years of age; to have studied three years; to have attended two courses of lectures, and to pass a satisfactory examination.

Graduates of other respectable schools are admitted upon payment of the Matriculation and half lecture fees. They cannot, however, obtain the Diploma of the University without passing the regular examinations and paying the usual Graduation Fee.

As the practical advantages here afforded for a thorough acquaintance with all the branches of medicine and surgery are *quite equal* to those possessed by the schools of New York and Philadelphia, the same fees are charged.

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It combines, as perfectly as possible, the qualities of a text-book and work of reference. We think this last edition of Gross' "Surgery" will confirm his title of "*Primus inter Pares.*" It is learned, scholar-like, methodical, precise and exhaustive. We scarcely think any living man could write a complete and faultless a treatise, or comp ehend more solid, instructive matter in the given number of pages. The labor must have been immense, and the work gives evidence of great powers of mind, and the highest order of intellectual discipline and methodical disposition, and arrangement of acquired knowledge and personal experience.—*New York Medical Journal*, February, 1873.

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In a word, we do not know of any similar work which is at once so elaborate and so concise, so full and yet so accurate; or which in every part leaves upon the mind the impression of its being the product of an author richly stored with the fruits of clinical observation, and an adept in the art of conveying them clearly and attractively to others.—*American Journal of the Medical Sciences*, April, 1881.

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Universal verdict has pronounced it, humanly speaking, a perfect treatise upon this subject. As it is the only complete and illustrated work in any language treating of fractures and dislocations, it is safe to affirm that every wide-awake surgeon and general practitioner will regard it as indispensable to the safe and pleasant conduct of his professional work.—*Detroit Lancet*, Nov. 19, 1880.

Dr. Hamilton is the author of the best modern work in his own or any other language on fractures and dislocations.—*London Med. Times and Gazette*, Nov. 19, 1881.

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It will be found a cyclopædia of information, systematically arranged, on all diseases of the alimentary tract, from the mouth to the rectum. Perverted nutrition is in some form associated with all diseases we have to combat, and we need all the light that can be obtained on a subject so broad and general. Dr. Habershon's work is one that every practitioner should read and study for himself.—*New York Medical Journal*, April, 1879.

The first edition was esteemed the best publication of the kind in the language and was a boon to the young practitioner. The present edition, while retaining all the essential features of the first, has been enriched by the fruits of twenty years of experience and observation of its author. Habershon's is an excellent book, and may be commended to every student and practitioner.—*American Practitioner*, July, 1879.

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